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History of Indian Railways

Constructed and in progress

Corrected up to 31 March 1964

GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS (RAILWAY BOARD)

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History of Indian Railways

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GOVERNMENT OF INDIA
MINISTRY OF RAILWAYS (RAILWAY BOARD)

Books, Technical Monographs and Technical Papers published by the Railway Board

BOOKS

(1) Report by the Railway Board on Indian Railways for 1964-65. Published yearly. Price Rs. 7·25 or 16 *sh.* 11 d or $ 2·61 Cents.

(2) Indian Railways, 1964-65. Published yearly. Price Rs. 2·50.

(3) Classified List of Gazetted Establishment of Indian Railways, corrected up to 31 December, 1965. Price Rs. 18·50 or 40 *sh.* 10*d.* or $ 6.66.

(4) History of Indian Railways, Constructed and in Progress, corrected up to 31 March, 1955. Published sexennially. Price Rs. 18·50 or 28 *sh.*

(5) Annual Report of Research, Designs and Standards Organisation, 1964-65. Price Rs. 18·10 or 27*sh.*

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(22) Railways and the Locations of Industries by S. K. Khanna. Price Re. 0·40 P.

(23) A Guide to Pension and S.R.P.F. by M. V. Ramana Rao. Price Re. 0·40 P.

NOTE—The books at serial numbers (1) to (6) above can be had from the Manager of Publications, Publication Branch, Civil Lines, Delhi-6 and the publications at serial numbers (7) to (23) can be obtained from the Principal, Railway Staff College, Baroda.

TECHNICAL MONOGRAPHS

(24) Twenty-nine monographs on technical subjects of interest to railwaymen have been published and issued by the Research Directorate of Research, Designs and Standards Organization, Alambagh, Lucknow. The complete list is given below:

Technical Monograph		*Name*	*Author*	*Remarks*
No.	1.	Explanatory notes on soil exploration and field identification	..	Out of stock
"	2.	Suggested simple method of designing concrete mixes for minor works	..	Out of stock
"	3.	Analytical comparison between different methods of concrete mix design	..	Out of stock
"	4.	Tunnelling techniques	U. G. K. RAO	Out of stock
"	5.	The problem of diesel *vs.* steam rail traction	R. K. SETHI	Out of stock
"	6.	The significance of laboratory tests on the design and selection of engineering materials	S. RAMANUJAM	Out of stock
"	7.	Waterway required for Bridges	GURDIAL SINGH	Available
"	8.	New transhipment yard at Garhara (near Barauni junction)	K. C. SOOD AND K. DEVANATHAN	Available
"	9.	The selection and design of a rail section	K. C. SOOD AND M. MENEZES	Available
"	10.	Simple tests to determine approximately the quality of building limes	..	Available
"	11.	Remodelling of MG marshalling yards	K. DEVANATHAN AND M. M. AGERWALA	Out of stock
"	12.	Track loading fundamentals	C. W. CLARKE	Available
"	13.	Problem of Yamuna Bridge at Delhi	GURDIAL SINGH	Out of stock
"	14.	Application of soil mechanics to five interesting railway problems	U. G. K. RAO, R. NAGARAJAN, R. BASU CHOUDHURY, O. P. KAPUR, A. K. RAMAYYA, K. SITARAMAN	Available
"	15.	Selection of ruling gradients	K. C. SOOD	Available
"	16.	Centralised traffic control in U.S. Rail-roads and its applications in India	A. K. SARKAR	Available
"	17.	Corrosion and its Prevention	S. RAMANUJAM	Available
"	18.	Modern principles of bogie design and their use in the MAN—HAL bogie for model 411 coach	ULRICH KAYSERLING	Available
"	19.	Testing to destruction of prestressed concrete girders	N. N. SARMA	Available
"	20.	Gradients in hump yards	O. S. MURTHY	Available
"	21.	Some topics in vehicle design	J. L. KOFFMAN	Available
"	22.	Remedial measures for deteriorated track formations	R. NAGARAJAN	Available
"	23.	Rail defects and failures	R.D.S.O.-CRJ	Available
"	24.	Broken wire Protection	V.U. SHENAI	Available
"	25.	Running Shed Planning and Design	I.K. PURI	Available
"	26-	Axle Defects and Failures	R.D.S.O.-CRJ	Available
"	27.	Railway Bridge across Son	R.K. JAIN	Available
"	28.	The practical aspects of corrosion Prevention	S. RAMANUJAN	Under Print
"	29.	Measured Shovel Packing as done on the French Railways	B. MOHANTY	Available

TECHNICAL PAPERS

(25) The number of technical papers published by the Railway Board up to date is 337. The papers comprise:

(*a*) Original descriptions of railway works and studies of railway problems in India and elsewhere.

(*b*) Reprints of articles from foreign engineering magazines.

(*c*) Reprints or abstracts of reports received by the Government of India on subjects connected with railways.

A few of the important technical papers are mentioned below:

Technical Paper		Name	Author
No.	153.	River training and control on the guide bank system	F. J. E. SPRING
,,	215.	The Hardinge Bridge over the Ganges Lower at Sara	SIR ROBERT GALES
,,	244.	Sleeper spacing and the effect of the new Permissible Axle-loads	A. F. HARVEY
,,	245.	Report of the Indian Railway Bridge Committee on track stresses	..
,,	256.	Notes on the preparation of railway projects	H. L. GLASS
,,	262.	Notes on steps to be taken to permit of running the future large vehicles on Broad Gauge Railways, 1927	A. I. SLIEGH
,,	267.	Flood-Lighting, 1929	H. J. MULLENEUX
,,	271.	Antiseptic treatment of *Pinus Longifolia* for Railway Sleepers	KAMESAM
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,,	273.	A Schedule system for the Control of Operations in Workshops, 1929	H. H. SAUNDERS
,,	276.	Investigation into the Strength of Rail Joints	H. HOWE AND L. H. SWAIN
,,	277.	Description of the Cost Accounting Scheme introduced in the Locomotive Workshops at Moghalpura	A. E. HOWELL
,,	278.	Notes on Tube Railway Construction	H. G. SALMOND
,,	279.	Report on Track Practice on American and Canadian Railways	A. F. HARVEY
,,	280.	The Installation of a Production system in the Locomotive Workshops at Moghalpura	A. E. HOWELL
,,	281.	The Belt System of Repairs introduced in the Loco. Workshops at Kancharapara	R. DE'VERA IRWIN AND J. R. POTTER
,,	282.	Notes on "Fridera" a composition for reconditioning abraised spike holes in Railway Sleepers	S. KRISHNA AND T. P. GHOSE
,,	283.	Description of a system introduced in the Stores Department of E. I. Railway with appendices	F. G. S. MARTIN AND A. R. A. HARE DUKE
,,	284.	Notes on progressive system of wagon repairs as introduced in N. W. R. Workshops at Moghalpura.	B. S. SINDHU
,,	285.	Notes on the methods by which the provisions regarding Rates and Fares embodied in the English Railway Act of 1921 were framed both from the points of view of the Railway Coys. and of the compilers of the Act	E. A. SIMS
,,	286.	Stresses in Fishplates for 90 lbs. Rails (with conclusions affecting the design of standard rail and fishplate sections)	E. A. SIMS
,,	287.	Report on Oil Burners and Wicks for Signal Lamps	H. E. COX
,,	288.	G. I. P. Railway Dynamometer Car, Report No. 11, Train Resistance	C. W. CLARKE
,,	289.	The Hump Yard in India	MAJOR H. W. WAGSTAFF
,,	291.	Controlled Concrete	A. W. CRIP VILLIERS
,,	292.	Hints on the Construction of a Railway in the plains with special reference to Bengal	K. B. RAY
,,	293.	Simplified Design of Masonry Arch by Elastic Theory	A. VASUDEVAN AND GURDIAL SINGH
,,	294.	Frame Arch, Spans for Railway Loadings	H. J. NICHOLAS
,,	296.	Paint Flaking on Railway Carriages	H. M. R. MORSE AND B. S. SINDHU
,,	297.	The Maximum Length of Rails as affected by the range of temperature and the design of Rail-Joints	A. M. SIMS
,,	298.	Cost Accounting in English and Indian Railway Workshops	S. V. IYER
,,	300.	Report on investigation into modern methods of introducing Transition Curves economically into existing lines of Railways	R. H. MARTIN
,,	301.	Note on Reconditioning of Curves	R. STRICK
,,	303.	Wear of Rails on curves and check rails clearances required on curves of 4° and sharper	A. M. SIMS
,,	305.	Primary Stresses in Railway Tracks	W. E. GELSON
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,,	308.	Braking Distances of Metre Gauge Trains	E. W. BAKER
,,	309.	The Section and Armour of a Guide Bank for the Training and Control of the Great Alluvial Rivers	K. B. RAY
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,,	322.	Practical Well Foundations and Girder Erection for the Lesser "Major Bridges" in India	FRANK J. SALBERG
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,,	324.	Engine failure Analysis on the Bengal Nagpur Railway	H. M. CHATTERJEE
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,,	335.	River training and control for bridges	H. K. L. SETHI
,,	336.	Ganga Bridge near Mokameh	H. K. L. SETHI
,,	337.	Rihand Bridge with special notes on pneumatic sinking of wells	VIJAY SINGH

Catalogue of technical papers priced at Re. 0·44 P. can be had from the Manager of Publications, Civil Lines, Delhi-6. The technical papers can also be bought from him.

The prices of the papers vary from 19 P. to Rs. 25.00.

PERIODICALS

Indian Railway Technical Bulletin—Edited and published quarterly by the Deputy Director General, Research, Designs and Standards Organization, Alambagh, Lucknow. The annual subscription of the Bulletin is as follows:

Inland	Rs. 3·00 including postage
Foreign	Rs. 5·00 including postage
Single copy	Re. 1·00 plus postage

Concessional annual subscription for the employees of the Indian Railways is Rs. 2·00 (50 P. per copy) only. Railway employees should register orders with the Secretary to the General Manager of their railway and non-railway subscribers direct with the publisher.

Documentation Notes—A monthly publication giving abstracts of articles of interest on railway and allied engineering subjects. Annual subscription Re. 1·00 for the employees of the Indian Railways and Rs. 6·00 including postage for other subscribers.

Indian Railways—A monthly magazine published by the Joint Director, Public Relations, Railway Board, New Delhi, devoted to railway affairs in India and abroad. Annual subscription:

Inland	Rs. 10·00 including postage
Foreign	18sh. or $2·25 including postage
Single copy	Re. 1·00 and Rs. 4·00 for the annual number.

Concessional subscription for the employees of the Indian Railways is Rs. 8·00 per annum.

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CHAPTER I

GENERAL

(1) RAILWAY ADMINISTRATION AS ON 31 MARCH 1964

The total length of all Indian Railways open for traffic on 31 March 1964 was 57,584·80 kilometres and their capital-at-charge amounted to Rs. 2,166·49 crores. Of the present kilometrage, 56,499·79 kilometres of Railways are owned and operated by the government along with 422·97 kilometres owned by companies, District Boards, etc. The balance of 662·04 kilometres are owned and operated by companies.

The existing Railway system represents the result of over a hundred years of construction, extensions and development from the first small beginnings in 1853. The progressive increase in the open kilometrage may be seen from the following table :—

Progress of kilometrage opened since commencement

Year	Open kilometrage at the end of the year	Year	Open kilometrage at the end of the year
1853	32	1929-30	67,148
1860	1,349	1937-38†	66,105
1870	7,678	1940-41	66,067
1880	14,745	1944-45‡	65,193
1890	26,395	1947-48§	54,694
1900	39,834	1949-50	54,753
1910	51,658	1954-55	55,852
1919-20*	59,119	1957-58	56,148
		1960-61	56,962
		1961-62	57,089
		1962-63	57,389
		1963-64	57,585

*During the First World War seven lines aggregating to 745 kilometres were dismantled to meet urgent military requirements.

†On 1 April 1937 Burma Railways, a length of 3,315 kilometres were separated from the Indian Railway system.

‡During the Second World War, more than two dozen selected branch lines involving over 1,609 kilometres of rail length, were dismantled to provide track for military operations.

§On 15 August 1947, due to the Partition of the country, a length of about 11,198 kilometres of railway fell in Pakistan.

The greater part of the kilometrage consists of single track. The following table shows the relative length of single and additional tracks at the end of the year 1963-64 :—

Single and additional track route kilometrage

Single line	49,190·26
Double line	8,104·34
Triple line	23·61
Quadruple line	258·56
Quintuple line	6·45
Sextuple line	0·13
Septuple line	1·43
	57,584·80@

@The difference of 0·02 kilometres is due to rounding off.

The length of double line is still comparatively small and is distributed among the different railways as follows—

Double Line Route Kilometrage

Railway	Kilometres
Broad gauge	
Eastern—Calcutta to Mughalsarai (main line), Mughalsarai to Sitarampur (Grand Chord) etc.	1,396
Northern—Attari (Boundary line) to Saharanpur *via* Ludhiana, Delhi to Ghaziabad, Tundla to Kanpur, Allahabad to Mughalsarai, Bareilly-Shahjahanpur—Lucknow and branches, etc.	1,595
Central—Bombay to Itarsi, Kalyan to Poona, Bhusawal to Nagpur, etc.	1,768
Western—Bombay to Baroda, Ahmedabad to Boriavi, etc.	748
Southern—Madras to Arkonam, etc.	777
South-Eastern—Calcutta to Kharagpur, Kharagpur to Adra, Sini to Manoharpur, Anarate Kandra and certain other branches, etc.	1,440
Metre gauge	
Small sections on Central, Northern, North Eastern, Southern and Western Railways, totalling	380

Triple, quadruple, quintuple, sextuple and septuple tracks are confined to areas in the vicinity of Calcutta, Bombay and Madras where the suburban traffic is very heavy.

The earliest railways in India were constructed on the 1·676 metre gauge which, it was intended, should remain the standard gauge. Later, on considerations of economy in the cost of construction, particularly to serve areas subject to recurrent famines some of the new branch and feeder lines were built on a gauge of 1·000 metre called the metre gauge. Some of the lines so constructed were since converted to the broad gauge. Later still, various short feeder lines on the 0·762 metre gauge, which originally were little more than steam tramways laid on existing roads, were added. Lastly, a still smaller gauge of 0·610 metre was first adopted for the purpose of the hill railway to Darjeeling which was opened in 1880 and other lines on this gauge have also since been constructed. A few of the lines were also built on special gauges of 1·219 metres and 1·067 metres etc. but were later on converted to one of the above gauges. There are thus at the present time four gauges on Indian Railways, the respective kilometrage being as follows—

Gauges	Route kilometrage	Track* (including sidings) kilometrage
Broad gauge (1·676 metres,	27,459·30	50,816·21
Metre gauge (1·000 metre)	25,142·95	32,732·47
Narrow gauge (0·762 metre)	4,272·50	4,852·44
Narrow gauge (0·610 metre)	710·05	819·44
Total	57,584·80	89,220·56

*Including extra kilometrage due to double, treble, etc., track.

Electrification—Electric traction was introduced on the Indian Railways in 1925, and the first electric train ran from Victoria Terminus (Bombay) to Kurla and Bandra. From 1926 to 1936, electrification at 1500 V DC system was carried out on the ex-Great Indian Peninsula, the ex-Bombay-Boarda and Central India and the ex-South Indian Railways. The two DC systems, i.e., 1500 V DC and 3000 V DC extend over 530 route kilometres or 1,632 single track kilometres, distributed on Bombay to Poona and Kalyan to Igatpuri sections of the Central Railway, Bombay Churchgate to Virar on the Western Railway, Madras Beach to Tambaram on the Southern Railway and Howrah to Burdwan and Sheoraphuli to Tarakeswar on the Eastern Railway. In 1957, it was decided to adopt 25 KV AC, 50 cycles, single phase traction, as the future standard traction on Indian Railways. The detailed description of planned execution of the electrification on Indian Railways is given in Appendix A-II(1) at the end of the publication.

Existing Railway Administrations in India—The existing Railway Administrations in India, alphabetically arranged by classes showing the working agencies, ownership and route kilometrage on 31 March 1964 are given in the subjoined list. For statistical purposes, Indian Railway systems were classified into three classes based on their earnings, with effect from the year 1922-3, in accordance with the recommendations of the Committee for the Revision of Statistics on Indian Railways, 1923—

Class I—Railway systems with gross earnings of Rs. 50 lakhs and over a year;
Class II—Railways with gross earnings of less than Rs. 50 lakhs but exceeding Rs. 10 lakhs a year;
Class III—Railways with gross earnings of Rs. 10 lakhs and under a year.

At that time, there were over 175 railways managed by more than 60 Railway Administrations, of which 15 ranked as Class I, 10 as Class II and over 35 as Class III. The full list of the Railway Administrations *then* existing arranged according to above classes and also according to their system of working is given in Appendices A and B of the Supplement to the History of Indian Railways. This classification was mainly made to relieve the smaller Railways of the necessity for compiling the detailed statistics which larger Railways were required to compile. Accordingly Class I Railways submitted returns in full details, while Class II Railways and Class III Railways submitted returns only in a condensed form. No change from one class to another was, however, made after 1942 though earnings in many cases exceeded the limits of gross earnings laid down for Class II and Class III railways.

A major change in the classification of Indian Railways was rendered necessary consequent on the Federal Financial Integration and the regrouping of all the principal Railways into six territorial systems, between 1 April 1950 and 14 April 1952. All the principal Railways had come under Government management, only about 890 kilometres in all being left under the management of non-Government agencies. With effect from 1952-3 the Indian Railways have been re-classified for statistical purposes as follows:

(*a*) Government Railways;
(*b*) Non-Government Railways.

Two of these six territorial systems were subsequently bifurcated into two systems each, one from 1 August 1955 and the other from 15 January 1958 for administrative reasons, thus making a total of eight territorial systems against six.

Railway Administrations in India (alphabetically arranged) by Classes showing the working agencies, ownership and route kilometrage open on 31 March 1961

Railway system		Lines comprised in the system			Owned by
Name	Worked by	Name	Gauge	Route kilometrage	
		(A) Government Railways			
(1) Central ..	Indian Government ..	(*a*) Central ..	1·676m.	6,111	Indian Government.
		(*b*) Central ..	1·000m.	1,546	Indian Government.
		(*c*) Central ..	0·762m.	515	Indian Government.
		(*d*) Ellichpur-Yeotmal	0·762m.	190	Branch Line Company under rebate terms.
		(*e*) Pulgaon-Arvi ..	0·762m.	35	Branch Line Company under rebate terms.
		(*f*) Central ..	0·610m.	427	Indian Government.
(2) Eastern ..	Indian Government ..	(*a*) Eastern ..	1·676m.	4,022	Indian Government.
		(*b*) Eastern ..	0·762m.	28	Indian Government.
(3) Northern ..	Indian Government ..	(*a*) Northern ..	1·676m.	6,710	Indian Government.
		(*b*) Rupar-Nangal* ..	1·676m.	56	Indian Government.
		(*c*) Mukerian-Pathankot	1·676m.	41	Indian Government.
		(*d*) Northern ..	1·000m.	3,298	Indian Government.
		(*e*) Northern ..	0·762m.	260	Indian Government.
(4) North Eastern ..	Indian Government ..	(*a*) North Eastern ..	1·676m.	52	Indian Government.
		(*b*) North Eastern ..	1·000m.	4,909	Indian Government.
(5) Northeast Frontier.	Indian Government ..	(*a*) Northeast Frontier†	1·676m.	178	Indian Government.
		(*b*) Northeast Frontier	1·000m.	2,641	Indian Government.
		(*c*) Chaparmukh-Silghat‡	1·000m.	82	Branch Line Company under guarantee terms.
		(*d*) Katakhal-Lalabazar ‡	1·000m.	38	Branch Line Company under guarantee terms.
		(*e*) Darjeeling-Himalayan	0·610m.	84	Indian Government.
(6) Southern ..	Indian Government ..	(*a*) Southern ..	1·676m.	3,141	Indian Government.
		(*b*) Cochin Harbour Extension	1·676m.	7	Cochin Harbour Authority.
		(*c*) Tenali-Repalle ..	1·676m.	34	Zilla Parishad, Guntur.
		(*d*) Southern** ..	1·000m.	6,702	Indian Government.

*Jointly owned by the Government of India and the Government of Punjab (India). m=metre

†Includes 3·46 kilometres between Haldibari and Pakistan Border for direct communication with Pakistan.

‡This line is guaranteed by the Government of India and also received a subsidy from the Assam Government for the first ten years.

**Includes Alnavar–Dandeli (31 kilometres) purchased by the Government of India on 1-10-1962.

Railway system		Lines comprised in the system			Owned by
Name	Worked by	Name	Gauge	Route kilometrage	
		(A) Government Railways—contd.			
(6) Southern—*contd.*	Indian Government ..	(*f*) Peralam-Karaikkal	1·000m.	24	Indian Government.
		(*g*) Pondicherry ..	1·000m.	13	Indian Government.
		(*h*) Nanjangud Town Chamarajanagar	1·000m.	36	District Boards, Mysore and Mandya.
		(*i*) Cochin Harbour Extension	1·000m.	2	Cochin Port authorities line (Ministry of Transport)
		(*j*) Southern ..	0·762m.	154	Indian Government.
(7) South Eastern..	Indian Government ..	(*a*) South Eastern ..	1·676m.	4,472	Indian Government.
		(*b*) South Eastern ..	0·762m.	1,405	Indian Government.
(8) Western ..	Indian Government ..	(*a*) Western ..	1·676m.	2,635	Indian Government.
		(*b*) Western ..	1·000m.	5,898	Indian Government.
		(*c*) Western ..	0·762m.	1,156	Indian Government.
		(*d*) Western (Ujjain-Agar).	0·610m.	67	Indian Government.
		(B) Non-Government Railways			
(1) Ahmadpur Katwa	Ahmadpur-Katwa Railway Co.	Ahmadpur-Katwa* ..	0·762m.	52	Branch Line Company under guarantee terms.
(2) Arrah-Sasaram Light	Arrah-Sasaram Light Railway Co.	Arrah-Sasaram Light	0·762m.	105	Company Line subsidized by District Board of Shahabad.
(3) Bankura-Damodar River	Bankura-Damodar River Railway Co.	Bankura-Damodar River*	0·762m.	96	Branch Line Company under guarantee terms.
(4) Burdwan-Katwa	Burdwan-Katwa Railway Co.	Burdwan-Katwa* ..	0·762m.	52	Branch Line Company under guarantee terms.
(5) Dehri-Rohtas Light	Dehri-Rohtas Light Railway Co.	Dehri-Rohtas Light ..	0·762m.	67	Company Line subsidized by District Board of Shahabad.
(6) Futwah-Islampur	Futwah-Islampur Light Railway Co.	Futwah-Islampur* ..	0·762m.	43	Branch Line Company under guarantee terms.
(7) Howrah-Amta Light	Howrah-Amta Light Railway Co.	Howrah-Amta Light	0·610m.	70	Company Line subsidized by District Boards of Howrah and Hooghly and Municipality of Howrah.
(8) Howrah-Sheakhala Light	Howrah-Sheakhala Light Railway Co.	Howrah-Sheakhala Light.	0·610m.	27	Do.
(9) Shahdara (Delhi) Saharanpur Light	Shahdara (Delhi) Saharanpur Light Railway Co.	Shahdara (Delhi) Saharanpur Light†.	0·610m.	149	Company Line.

*Guaranteed by the Government of India.

†Received land only from Government.

m=metre.

the other from 15 January 19

Categories of existing Railway Systems in India—The existing Railway systems in India fall under one or other of the following categories according to the type of ownership and management, namely—

(1) Indian Railways owned and managed by Government namely,

(*i*) Central Railway;

(*ii*) Eastern Railway;

(*iii*) Northern Railway;

(*iv*) North Eastern Railway;

(*v*) Northeast Frontier Railway;

(*vi*) Southern Railway;

(*vii*) South Eastern Railway; and

(*viii*) Western Railway.

(2) Railways owned by Companies or District Boards, but worked by Government, namely,

(*a*) Company-owned Railways—

(*i*) Railways worked under Guarantee terms, such as, Chaparmukh-Silghat Railway (Northeast Frontier) and Katakhal-Lalabazar Railway (Northeast Frontier);

(*ii*) Railways worked under rebate terms, such as Pulgaon-Arvi Railway and Ellichpur-Yeotmal Railway (Central).

(*b*) District Board lines—

(*i*) Railways worked under rebate terms, such as Tenali-Repalle Railway (Southern).

(*ii*) Railways worked without any Guarantee or rebate terms, such as Nanjangud-Chamarajanagar (Southern).

(3) Railways owned by companies or District Boards and worked by the owning Companies or District Boards themselves, namely,

(*a*) Railways worked by Companies under Guarantee terms, e.g., Ahmadpur-Katwa Railway and Burdwan-Katwa Railway,

(*b*) Lines worked by unassisted companies e.g., Shahdara (Delhi)—Saharanpur Light Railway,

Among the Railways owned and managed by Companies, there are a few which receive no direct assistance from the Government, for example the Shahdara (Delhi)—Saharanpur Light Railway, while there are others which have been guaranteed a certain rate of interest on their capital. Examples of the latter class are the "Ahmadpur-Katwa", "Burdwan-Katwa" and "Futwah-Islampur" Light Railways.

In the case of Shahdara (Delhi) Saharanpur Light Railway and Railway Companies receiving assistance (guaranteed interest) from the Government the surplus profits above certain prescribed limits are shared between the Government and the Companies. Some of the Railways are aided by local district boards, who also share in the profits when exceeding certain limits and have the option to purchase the lines from the Companies on specified dates. The "Arrah-Sasaram", "Howrah-Sheakhala" and "Howrah-Amta" Light Railways are the examples of this class of railways.

(2) HISTORY OF RELATIONS OF THE GOVERNMENT TO RAILWAYS

Diversity of relations between the State and Railways—The policy in regard to the construction of Railways in India had in the past undergone considerable and frequent changes and one of the special features of the development of the Indian Railway System was the diversity of conditions that prevailed in the relation of the State* to the various lines in respect of ownership and control. The diversity of conditions in certain respects was, however, less important than might at first appear for the following reasons—

The Government of India exercised under the Indian Railways Act, 1890, in respect of all Railways in British India (and also, by virtue of arrangements with the former Indian States, in respect of certain railways passing through such States), certain general powers. Thus, a railway could not be opened until a Government Inspector had certified that it had been constructed so as to comply with requirements laid down by the Government and could be used for the public carriage of passengers without danger to them. The Government of India could also, in the interest of the safety of passengers, require a railway to be closed, or the use of particular rolling-stock to be discontinued or prescribe conditions for the use of the railway or the rolling-stock. They could appoint a Railway Commission to investigate complaints on certain matters such as the withholding of reasonable traffic facilities or the grant of undue preference.

In addition, the Government of India (or in some cases Local Governments) exercised, under the provision of contract, detailed control over the management of all Railways in British India greatly exceeding that which is secured by the Indian Railways Act. They also had a certain financial interest in all companies in British India, and a preponderating interest in most of the larger railways.

Relations of the Government and Companies—The main causes leading to the diversity of conditions in regard to the agency by which railways were managed, and the relations of the Government with the various classes of companies, are summarized in the following paragraphs.

The first proposals for the construction of railways in India were submitted in 1844 to the East India Company in England by Mr. R.M. Stephenson†, and others; they included the construction of lines by railway companies to be incorporated for the purpose and the guarantee by the East India Company of a specified return. A contract for the construction by the East India Railway Company of an experimental line of 160.9 kilometres (100 miles) from Calcutta towards

*'State' refers to Government of India throughout this publication unless contrary is explicit in the context.

†Afterwards Chief Engineer of the East Indian Railways.

Mirzapur or Rajmahal at an estimated cost of £1,000,000 was made in 1849, and a return of 5 per cent was guaranteed by the East India Company on the Capital; and a similar contract was made in the same year with the Great Indian Peninsula Railway Company for a Railway line from Bombay to Kalyan at an estimated cost of £500,000. But the policy of entrusting generally the construction of Indian Railways to guaranteed companies was not adopted until 1854 on the recommendation of Lord Dalhousie, who in a minute, dated 20 April 1853, explained his reasons for preferring the agency of companies under the supervision and control of the Government to the construction of lines on behalf of the Government by its own officers. He held that the State 'Engineer officers' would make railways as well, and possibly as cheaply, and as expeditiously as companies, but that the withdrawal from other duties of the large number of officers required would be detrimental to the public interest, that the conduct of commercial undertakings did not fall within the proper functions of any Government and least of all within the functions of the Government of India, since the dependence of the population on the Government in India was, one of the greatest drawbacks to the advance of the country, and that the country would, therefore, benefit by the introduction of English energy and English capital for railway purposes, with the possibility that such energy and capital would in due course be encouraged to assist in the development of India in other directions.

Old Guaranteed Railways The policy supported by Lord Dalhousie was adopted between 1854 and 1860. Contracts for the construction of Railways in India were made by the East India Company, or (after 1858) by the Secretary of State for India with the East Indian, Great Indian Peninsula, Madras, Bombay Baroda and Central India, Sind* (afterwards, the Sind, Punjab and Delhi), Eastern Bengal,* Great Southern of India (afterwards, when amalgamated with the Carnatic Railway Company, the South Indian) and Calcutta and South-Eastern Railway Companies. Under these contracts the railway companies undertook to construct and manage specified lines, while the East India Company—later the Secretary of State for India—agreed to provide land and guaranteed interest on the capital, the rate fixed being in various cases 5, 4¾ and 4½ per cent according to the market rates prevailing when the various contracts were made. The rate of exchange for remittance of interest charges was reckoned at 22nd to the rupee. Half of any surplus profits earned was to be used towards repaying the Government any sums by which it had been called upon to supplement the net earnings of any previous period in order to make good the guarantee of interest and the remainder was to belong to the shareholders. In practically all matters of importance except the choice of staff, the companies were placed by the contracts under the supervision and control of the Government which had power to decide on the standard and details of constructions; the rolling stock to be provided, the number, time and speed of trains; the rates and fares to be charged; the expenditure to be incurred, the standard of maintenance; and the form of accounts. The railways were to be held by the companies on leases terminating at the end of 99 years and on such termination the fair value of their rolling-stock, plant and machinery was to be paid to them. But provision was also made to enable the Government to purchase the lines after 25 or 50 years on terms calculated to be the equivalent of the companies' interest therein, and also be to enable the companies to surrender their lines to the Government and to receive in return their capital at par.

Early Attempts to Secure Funds for Railway Construction without a Guarantee—An attmept to secure the construction of railways in India, on terms more favourable to the Government than those of the contracts with the original guaranteed companies, was first made in 1862, when a subsidy, but not a guarantee, was granted to the Indian Branch Railway Company which proposed to make feeders to the trunk lines in Northern India, and did actually make one such line. Similar assistance was granted later to the Indian Tramway Company, which constructed and operated a short line in Madras. In 1864, the terms granted to the two companies mentioned were taken as a standard for general adoption with a view to the encouragement of similar companies. The chief provisions were that the Government, besides giving the necessary land free of cost, would grant an annual subsidy for 20 years at a rate not exceeding £62·14 per kilometre of line with an addition in respect of large bridges costing more than £10,000. These terms failed to attract capital and the unguaranteed companies which had begun work found themselves after a few years unable to proceed without further assistance from the Government. Consequently, in 1867 a contract was entered into with the Indian Branch Railway Company (which soon after changed its name to the "Oudh and Rohilkhand Railway Company") by which the company was guaranteed interest at 5 per cent per annum on the cost of certain lines to be carried out by it, on conditions similar to those laid down in the contracts of the period 1854-1860. Similarly, the Indian Tramway Company, after having given in 1868 a guarantee of 3 per cent per annum, went into liquidation in 1870, and became absorbed in a new company called the Carnatic Railway Company (afterwards amalgamated with the Great Southern of India Railway Company to form the South Indian Railway Company) with which the Secretary of State entered into a contract guaranteeing interest on its capital at 5 per cent per annum. In 1869, Sir John Lawrence summed up the result of the experiment of the constructions of railways by unguaranteed companies as follows—

> "The Government of India has for several years been striving to induce capitalists to undertake the construction of railways in India at their own risk, and on their responsibility with a minimum of Government interference. But the attempt has entirely failed, and it has become obvious that no capital can be obtained for such undertakings otherwise than under a guarantee of interest fully equal to that which the Government would have to pay if it borrowed directly on its own account".

The attempt to encourage unguaranteed companies, having thus been unsuccessful, it became necessary to decide whether the old practice of relying on guaranteed companies, of the type that had provided capital for and had constructed the first railways in India, should be continued. The Government of India expressed their objections to this course. They doubted whether their power of control over such companies secured the greatest possible economy in construction. They also disliked the arrangements under which they guaranteed the interest on the capital of companies, and thus became responsible for loss on working while having only a comparatively remote prospect of profiting by the result of successful working. Two important changes were consequently made in the practice that had been followed since the beginning of railway construction in India—

(1) Arrangements were made with some of the most important of the guaranteed companies that in lieu of the provision that half of any surplus profits was to be applied in repayment of sums advanced by the Government under the guarantee of interest, half of the surplus profits for each half year should be the property of the Government. In consideration of this modification, the Government relinquished, in the case of three companies, the Great Indian Peninsula, the Bombay Baroda and Central India and the Madras, its right to purchase the lines at the end of the first 25 years from the dates of the respective contracts.

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*Forms part of the Pakistan Railways since 15 August 1947.

(2) It was decided by the Secretary of State that the time had arrived when in both raising and expending such additional capital as might be required for new lines in India, the Government should secure to itself the full benefit of its own credit and of the cheaper methods which it was expected that it would be able to use.

Accordingly, for several years after 1869, the capital expenditure on railway, was chiefly incurred direct by the State and no fresh contracts with guaranteed companies were made except for small extensions. Among the lines constructed or begun by State agency, and from State capital between 1869 and 1880 were the Indus Valley, Punjab Northern, Rajputana Malwa, Northern Bengal, Rangoon and Irrawadi Valley* and Tirhoot Railways.

Progress in the Construction of Railways—By the end of 1879, in about 25 years from the introduction of railways in India, 9,862 kilometres of railway had been constructed by Companies which had expended, approximately, £97,872,000 (these figures include the Calcutta and South-Eastern and Nalhati Railways which were constructed by companies but were purchased by the Government in 1868 and 1872, respectively). By the same date 3,500 kilometres of railway had been constructed by the Government at a cost of £23,695,226.

Introduction of Modified Guarantee Terms—In 1880, the necessity for great and rapid extension of the railway system was urged by the Famine Commissioners, appointed after the great famine of 1878, who estimated that at least 8,000 kilometres approximately (5,000 miles) were still necessary for the protection of the country from famine. It was held by the Government of the time that a limit was necessary on the capital borrowed annually and it was clear that the limit fixed was not high enough to allow of such progress in railway construction as was desirable. With reference to this difficulty the Famine Commissioners remarked : "That there would be manifest advantages in giving free scope to the extension of railways by private enterprise if it were possible; and, though the original form of guarantee has been condemned, it may not be impossible to find some substitute which shall be free from its defects and may secure the investment of capital in these undertakings without involving the Government in financial or other liabilities of an objectionable nature".

Action in the direction suggested by the Commission was taken by the formation of three companies without a guarantee namely, the Bengal Central in 1881 and the Bengal and North-Western and Rohilkund and Kumaon in 1882; and three new guranteed companies namely, the Southern Mahratta in 1882, the Indian Midland in 1885, and the Bengal Nagpur in 1887. The Bengal and North-Western and the Rohilkund and Kumaon Railway Companies are referred to more fully in a later paragraph. The Bengal Central Railway Company's operations were not successful at the outset, and a revised contract was entered into with the company, with effect from 1 July 1885, under which the Secretary of State guaranteed interest at 3·5 per cent on the company's capital, the balance of net earnings remaining after payment of interest on advances by the Secretary of State and debenture capital (but not the share capital) being divided between the Secretary of State and the company in the proportions of three-quarters to the former and one-quarter to the latter. The new contract gave the Secretary of State the right to take possession of the line on 30 June 1905, or subsequently at intervals of 10 years, on repaying the company's capital at par. The rate of interest guaranteed to the Southern Mahratta Railway Company was also 3·5 per cent, in this case the balance of net earnings remaining after payment of interest on advances by the Secretary of State (but not on share or debenture capital) was divisible in the same way as in the case of the Bengal Central Railway Company. The guarantee to the Indian Midland and Bengal Nagpur Railway Companies was 4 per cent; and the Secretary of State was entitled to three-quarters of the surplus profits in excess of all interest charges. The lines constructed by the three companies last mentioned were declared to be the property of the Secretary of State, who had the right to determine the contracts at the end of approximately 25 years after their respective dates, or at subsequent intervals of 10 years, on repaying at par the capital provided by the companies.

The Assam Bengal† Railway Company was formed on similar lines in 1892, except that any surplus profits were to be divided between the Secretary of State and the company in proportion to the capital provided by each. The rate of guarantee in this case was 3·5 per cent for the first six years and thereafter 3 per cent.

The terms of guarantee given to the companies formed since 1880 have thus been much more favourable to the Government than in the case of those formed prior to 1869.

Termination of Contracts of the Old Guaranteed Companies—In dealing with the guaranteed companies formed before 1869 and with those formed in 1881 and subsequently, it has been the practice (except in the cases mentioned above, when the purchase of some of the old guaranteed lines was postponed in order to secure to the Government a share in surplus profits) to use in some way or other, at the earliest possible date, the right reserved by the Government of terminating the original contracts of the various companies and of either securing for Government more favourable terms under fresh contracts, of purchasing the Railways by cash payments or by means of India stock or annuities terminable after a specified number of years.

The Oudh and Rohilkhand, South Indian, Bombay, Baroda and Central India and Indian Midland Railways were purchased by payment in form of India Stock specially issued for the purpose. Purchase by means of annuities was effected in case of the East Indian Railway, the Great Indian Pensinsula Railway, the Madras Railway, the East Bengal Railway† and the old Sind-Punjab and Delhi Railway†. The Government, of course, assumed liability for the debenture stock in all cases and from the date of purchase all further capital outlay was met either by direct provision from Government resources or by capital raised by further issue of debenture stock. The dates of termination of contracts with the various guaranteed companies were : the East Indian on 31 December 1879; the Eastern Bengal† on 30 June 1884; the Sind Punjab and Delhi† on 31 December 1885, the Oudh and Rohilkhand on 31 December 1888; the South Indian on 31 December 1890, the Great Indian Peninsula on 30 June 1900, the Bombay Baroda and Central India on 31 December 1905 and the Madras on 31 December 1907. The management of some of the purchased lines was entrusted to Working Companies constituted under fresh contracts.

The Eastern Bengal†, the Oudh and Rohilkhand, the Sind-Punjab and Delhi† and the Southern Punjab† lines were transferred after purchase to State management, the last two forming part of the North Western Railway†. Similarly, the Bengal Central line was purchased and made part of the Eastern Bengal Railway. The Madras and the Indian Midland lines were left, after acquisition, under the management of companies working other lines with which it was advantageous to amalgamate them. In the case of the East Indian, Great Indian Peninsula, South Indian, Bombay, Baroda and Central India, Southern Mahratta and Bengal Nagpur Railways, the course adopted was to arrange for the continuance of

*Forms part of the Burma Railways which have been transferred to the Government of Burma on 1 April, 1937.

†Now falls wholly or partly in Pakistan since partition on 15 August 1947.

management by the original company (or by a new company closely related to the old one), but to secure more favourable financial conditions for the State by one or more of the following methods:—

(*i*) reduction of the amount of capital retained by the companies in the undertakings;

(*ii*) reduction of the rate of interest guaranteed by the State on such capital; and

(*iii*) modification in favour of the Government of the clauses relating to the division of surplus profits.

Arrangements between the Government and Working Companies—The relations which existed between the Government and the guaranteed companies working railways might be summarised as follows:—

The lines worked by the Companies were the property of the State.

The greater part of the capital was the property of the Government, either through having been originally supplied by it or through the acquisition by the Government of the greater part of the companies' interest on the termination of old contracts.

When funds were required for further capital expenditure, the Government had the option either of providing them or of calling on the company to provide them. Both the Government and the company usually received interest at a fixed rate on their capital and surplus profits were divided between the Government and the company in the various proportions provided for by the contracts. The company's share was in most cases only a small proportion of the total amount.

All the contracts were terminable at the option of the Secretary of State at specified dates; and on termination the company's capital was repayable at par.

The administrative control exercised by the Government over the companies was as under :—

The Company was bound to keep the line in good repair, in good working condition and fully supplied with rolling-stock, plant and machinery; to keep the rolling-stock in good repair and in good working condition; and to maintain a sufficient staff for the purpose of the line, all to the satisfaction of the Secretary of State.

The Secretary of State might require the company to carry out any alteration or improvement in the line, or in the working that he may think necessary for the safety of the public or for the effectual working of the line.

The Secretary of State might require the company to enter into agreements, on reasonable terms and conditions, with the administrations of adjoining railways for the exercise of running powers, for the supply to one another of surplus rolling-stock, for the interchange of traffic and rolling-stock and the settlement of through rates, and for additions and alterations to, or the redistribution of, existing accommodation in junctions or other stations in view to their convenient mutual use.

The train service was to be such as the Secretary of State might require. In order to secure a general control over the rates quoted by companies, the Secretary of State retained power to settle the classification of goods and to authorise maximum and minimum rates within which the companies were entitled to charge the public for the conveyance of passengers and goods of each class.

The company had to keep such accounts as the Secretary of State might require, and these were subject to audit by the Secretary of State.

In all other matters relating to the line the company was made subject to the supervision and control of the Secretary of State, who could appoint such persons as he may think proper for the purpose of inspecting the line auditing the accounts, or otherwise exercising the powers of supervision and control reserved to him. In particular, the Secretary of State had the right to appoint a Government Director to the Board of the company with a power of veto on all proceedings of the Board. All the moneys received by the company in respect of the undertakings, whether on capital or revenue account, had to be paid over to the Secretary of State.

All expenditure by the company had to be stated and submitted for the sanction of the Secretary of State.

Thus, the Government had the preponderating financial interest in the lines worked by the two classes of guaranteed companies, those formed before 1869 and retained as working agencies with reduced capital after purchase, and those formed on terms more favourable to the State after 1880, it had exceedingly wide control over the methods of working; and it had the right of taking possession of the lines at the end of specified periods on repayment at par of the capital of the companies.

Other Lines Worked by Companies—In addition to the lines referred to above, and apart from lines constructed by branch line companies, District Boards and former Indian States, two lines of some importance were constructed by companies which received no direct assistance by the Government, namely, the Bengal and North-Western Railway and the Rohilkund and Kumaon Railway. The Rohilkund and Kumaon Railway Company was guaranteed interest at 4 per cent, during construction and received for 10 years thereafter a subsidy of Rs. 20,000 half yearly. This ceased in 1894.

While, however, these companies had no guarantee or other direct payment from the Government, they derived some advantage, partly through direct participation in profits and partly through reduction of expenses, from the fact that the working of certain State lines had been entrusted to them, the Tirhoot Railway to the former company and the Lucknow Bareilly Railway to the latter. Their lines could be purchased by the State in 1942 on terms which were different in respect of the different sections of the lines but were, on the whole, much more favourable to the companies than those provided for in the contracts with the guaranteed companies. Failing purchase in 1942, the lines, would have become the property of the State in 1981 on payment of certain amounts. The general administrative control exercised by the State over these companies and the control over expenditure were similar to that which was exercised, as explained above, over guaranteed companies.

Branch or Feeder Lines Financed by Private Enterprise, District Boards, etc.—Besides these two important lines, the B. & N.W. and the R. & K., there were many less important lines which were the property of the private companies, some being worked by the owning companies and some by the adjoining State Railways or by the Companies that worked the State-owned systems. Several minor lines were the property of district boards or enjoyed a guarantee of interest granted by such Boards. The method of encouraging construction of branch or feeder lines financed by private enterprise outside the Government of India Programme of railway construction originated in 1893 when the Government of India were unable to furnish necessary capital.

The Branch Line Terms as they were subsequently known, for the construction of branch or feeder lines of railways by the agency of private companies were first published in September 1893 and later modified in March 1895. As these terms were not fully understood the Government of India, in April 1896, cancelled the previous resolutions and notified the concessions* they were prepared to give; such concessions being usually limited to lines not exceeding 161 kilometres in length and being inapplicable to longer or more important railways or to mountain branches. These terms, however, practically failed to attract capital to invest in branch lines of railways and the question of their general revision continued to receive attention of the Government from time to time. As a result of the consideration given to the matter in 1909, a resolution† was issued in June 1910 offering terms which were considerably more liberal than those previously accorded. A revised resolution‡ was issued in November 1913 and further modified‡ in March 1914.

The essential point in which the several issues of Branch Line Terms differed was the nature and degree of financial assistance offered by the Government. This was as follows in each case :

1893 Issue—Rebate not exceeding 10 per cent of gross earnings of main line from interchanged traffic towards making up (together with net earnings of branch) return of 4 per cent per annum on capital expenditure on branch line.

1895 Modification—Rebate not exceeding net earnings of main line from interchanged traffic towards making up dividend of 3·5 per cent on capital expenditure on branch line.

1896 Issue—(1) Guarantee of 3 per cent per annum on capital expenditure with such share of surplus profits as may be agreed upon, or

(2) Rebate as in 1895 modification, the whole of earnings in excess of 3·5 per cent per annum going to the Branch Company.

1910 Issue—(1) Guarantee of 3·5 per cent per annum on capital expenditure, or

(2) Rebate not exceeding net earnings of main line from interchanged traffic towards making up dividend of 5 per cent on capital expenditure.

In both cases any surplus in excess of 5 per cent per annum on capital expenditure to be divided equally between the Branch Line Company and the Government.

1913 Issue—As in 1910 Issue, with substitution of "approved paid up share capital" of the Company for "capital expenditure" for the reason that the capital raised by a company may at times be considerably more than that for the time being expended and so to assure shareholders in the branch line companies of a definite return on their share capital.

1914 Modification—This allowed capital to be raised for the same branch partly under the guarantee system and partly under the rebate system.

In the Province of Assam on account of the relatively less developed state of the country and the difficulty experienced in obtaining capital for private railway enterprise under the ordinary terms, a resolution‡ was issued in January 1915 which provided that the Local Administration may, in approved cases, supplement the Imperial guarantee of 3.5 per cent described above by the grant from provincial funds of an additional guarantee for a specified term of years of 1 per cent on the *paid-up capital* of the company.

The liberal terms of 1910—14 proved more encouraging than under the earlier branch line terms. Following are the examples of railways constructed or sanctioned before and after the 1910 revision of the branch line terms :—

Branch line constructed under different terms

Line	Kilometrage
A—PRIOR TO 1910	
I. *Under Rebate Terms*	
Ahmedabad-Parantij	142·75
Ahmedabad-Dholka	53·98
Mymensingh-Jamalpur-Jagannathganj§	90·20
Tapti Valley	250·61
Southern Punjab ‖	1,475·21
Amritsar-Patti ‖	87·32
South Bihar	127·44
II. *Under Guarantee Terms*	
Brahmaputra-Sultanpur§	95·55
Hardwar-Dehra	51·56
B—AFTER 1910	
I. *Under Rebate Terms*	
Central Provinces (Ellichpur—Murtazapur-Yeotmal and Pulgaon-Arvi)	224·49
Gujerat (Nadiad-Kapadvanj and Godhra-Lunavada)	90·94
Champaner-Shivrajpur-Pani	53·90
Dhond-Baramati	43·87
Upper Sind Light Railways (Jacobabad-Kashmore) ¶	123·44
Sara-Serajganj §	85·26
Mandra-Bhaun ¶	74·64

*See Appendix 41 of the Administration Report on Railways in India for the years 1906 to 1908.
†See Appendix 28 of the Administration Report on Railways in India for the year 1910.
‡See Appendix B of the Administration Report on Railways in India for the years 1921-22.
§Forms part of the East Bengal Railway in Pakistan since 15 August 1947
‖Partly falls in Pakistan since 15 August 1947.
¶Forms part of the North Western Railway in Pakistan since 15 August 1947.

Line	Kilometrage
B—AFTER 1910—*contd.*	
I. Under Rebate Terms—contd.	
Hoshiarpur Doab (Jullundur-Mukerian, Phagwara-Rahon and Nawashahr to Jaijon)	143·34
Sialkot-Narowal*	61·41
Pachora-Jamner	55·72
Mayurbhanj	113·68
Larkana-Jacobabad*	51·18
Khulna-Bagerhat†	31·78
Panposh-Raipura	23·01
Darjeeling Himalayan Extension	153·60
II. *Under Guarantee and Rebate Terms*	
Mymensingh-Bahairab Bazar†	162·03
III. *Under Guarantee Terms*	
Burdwan-Katwa	52·26
Bankura-Damodar River	94·48
Ahmadpur-Katwa	51·92
Dasghara-Jamalpurganj Extension (Bengal-Provincial Railway)‡	13·37
Kalighat-Falta§	42·25
Futwah-Islampur	43·45
Chaparmukh-Silghat	81·77
Katakhal-Lalabazar	37·50
Arakan Light (in Burma)	29·18

*Forms part of the North Western Railway Pakistan since 15 August 1947.
†Forms part of the East Bengal Railway in Pakistan since 15 August 1947.
‡This line was closed to traffic on 20th March 1956 and since dismantled.
§This section was purchased by Government on 1st April 1957 and dismantled.

Another agency for financing feeder railways were the district boards which promoted the construction of a railway either by raising the capital from its own cess or by giving a guarantee to a company. Since 1884, district boards in the Madras Presidency were empowered to levy a special cess not exceeding 3 pies per rupee of land revenue, the proceeds beings reserved for the construction of feeder railways intended to develop the districts concerned, and in order to further assist Local Boards in such enterprise, Government permitted the grant of loans in 1903 through the Provincial Loan Account on the security of the special cess.

The Tanjore District Board Railway and the Kistna District Board Railway were for some years the only examples of lines so constructed. During 1913—16, the example of these Boards was followed in several other parts of the Presidency. Thus the construction of the Podanur-Pollachi Railway was undertaken by the District Board of Coimbatore, Tenali-Repalle Railway was taken up by the District Board of Guntur, the District Board of Tinnevelly took up the construction of the Tinnevelly-Tiruchendur Railway.

The first railway raised by the District Board, the Tanjore District Board Railway, was constructed partly from fund accumulated by the levy of special railway cess within the District and partly from funds provided by the Government of Madras from its provincial resources. It was subsequently decided that the latter source of capital should no longer be made available for the purpose of railway construction, and district boards were thus placed in the position of having to choose between the alternatives of waiting until their cess accumulations were sufficient to cover the capital cost of construction of railways in which they were interested, or of obtaining the whole or part of their capital by borrowing. The security which a district board was able to offer for its loan was the amount of its accumulated cess, the potential value of its annual cess levy and the value of the railway to be constructed. Various methods of borrowing were adopted to supplement the funds in hand from the proceeds of the cess. In 1913 an arrangement was concluded between the Government of Madras and the Madras Bank, under which the latter agreed to underwrite the issue up to a specified limit of debentures on behalf of district boards, and the Podanur-Pollachi Railway was constructed from funds raised by these means.

The Madras Presidency practically remained alone in this form of local enterprise, no other province having enacted legislation for the levy of a railway cess.

During the first World War, conditions in the money market became unfavourable for the raising of capital on reasonable terms, and cost of manufactured materials, such as rails and rolling-stock increased. For these reasons the Government of India found it necessary towards the end of July 1916 to prohibit altogether the raising of capital for branch line projects except under the most special circumstances or in the case of the lines already under construction.

Direct State Management—By the end of 1920-1 the route kilometrage of the railway in India stood at 59,592 distributed according to ownership as follows :—

	Kilometres owned
(1) Government (including Provincial Government and District Boards)	43,274
(2) Indian States	7,071
(3) Private companies	9,247
Total	59,592

Although nearly six-sevenths of the total kilometrage belonged to the Government and the Indian States, the actual kilometrage worked by the different agencies was as follows :—

	Kilometrage worked
(1) Gove nment	14,370
(2) Indian States	4,649
(3) Companies	40,573
Total	59,592

Only three principal railways, namely, the North Western, Eastern Bengal and Oudh and Rohilkhand, as well as the two small lines, the Jorhat (Provincial) and the Aden* railways, were under the direct management and control of Government. The Companies operating Indian Railways during 1920-1 were as follows :—

Companies operating Indian Railways in 1920-1

Company	Domiciled in	Kilometres worked
I—Companies which worked State-owned Railways		
(1) Bombay, Baroda and Central India Railway	England	6,330
(2) Great Indian Peninsula Railway	England	5,367
(3) Madras and Southern Mahratta Railway	England	4,904
(4) Bengal Nagpur Railway	England	4,575
(5) East Indian Railway	England	4,458
(6) Bengal & North Western Railway	England	3,320†
(7) South Indian Railway	England	2,981
(8) Burma Railways	England	2,612
(9) Assam Bengal Railway	England	1,643
(10) Rohilkund & Kumaon Railway	England	925‡
II—Companies which worked Private-owned Railways		
(11) His Exalted Highness the Nizam's Guaranteed State Railways	England	1,444
(12) Messrs Martin & Co.	India	523
(13) Messrs McLeod & Co.	India	303
(14) Bengal Doars Railway	England	254
(15) Darjeeling Himalayan Railway	India	235
(16) Barsi Light Railway	England	190
(17) Assam Railways & Training Co.	England	146
(18) Gujerat Light Railways	India	143
(19) Bengal Provincial Railway	India	68
(20) East India Distilleries and Sugar Factories Ltd.	India	51
(21) Dehri Rohtas Light Railway	India	38
(22) Tezpore-Balipara Light Railway	India	32
(23) Madaya Light Railway	India	26
(24) Jagadhri Light Railway	India	5
Total		40,573

There were, as shown in the list given in Appendices A and B of the Supplement to the History of Indian Railways, no less than 175 railway undertakings divided into 14 different categories. In view of the public interest in, and desire for, direct State management of the Railways, the question was referred to a Committee, which was set up in 1920 with Sir William Acworth as Chairman to enquire into questions relating to the management, finance and the future control and organization of railways. The Committee was unfortunately unable to make a unanimous recommendation on this point; the Chairman and four members expressing themselves in favour of State management, while five others were in favour of company management. They were, however, unanimous in recommending that the existing system of management by Boards of Directors in London should not be continued.

The approaching termination of the East Indian Railway contract on 31 December 1924 and that of the Great Indian Peninsula Railway on the 30 June 1925 rendered an early decision of this question imperative. The question was debated in the Legislative Assembly in February 1923, in which the non-official opinion was almost unanimously in favour of State management. The Government of India accordingly decided to take under direct State management the East Indian Railway and the Great Indian Peninsula Railway on termination of their contracts on 31 December 1924 and 30 June 1925. Thereafter all the other principal railways were intended to be taken over for direct State management on termination of the contract with the working companies either by effluxion of time or by exercising the option to purchase them. The various dates on which different railways were actually taken over were as follows :—

(1) the East Indian Railway from 1 January 1925,

(2) the Great Indian Peninsula Railway from 1 July 1925,

(3) the Burma Railway from 1 January 1929. (This railway, however, passed under the control of the Government of Burma from 1 April 1937 on the separation of Burma),

(4) the Bombay, Baroda and Central India Railway from 1 January 1942,

(5) the Assam Bengal Railway from 1 January 1942 and after purchase was amalgamated with the old Eastern Bengal Railway under the name of Bengal and Assam Railway.

(6) & (7) The Rohilkund and Kumaon and the Bengal and North Western Railways from 1 January 1943, when they were amalgamated together with the Tirhut Railway, the Mashrak Thawe Extension and Lucknow Bareilly Railway already worked by them to form one system under the name of the Oudh and Tirhut Railway.

(8) & (9) the Madras and Southern Mahratta and South Indian Railways on 1 April 1944,

(10) The Bengal Nagpur Railway on 1 October 1944.

*Closed for traffic from 1 August 1929.

†1,312 kilometres owned by the State and 2,008 kilometres by the Bengal and North Western Railway Company.

‡508 kilometres owned by the State and 417 kilometres by the Rohilkund and Kumaon Railway Company.

Regarding the financing of the construction of branch or feeder lines to be constructed and worked by the State-owned railways the Acworth Committee recommended that the Government of India should aim at reducing by purchase the number of existing companies. Revised orders for financing of branch lines were accordingly issued in Government of India (Railway Board) Resolution No. 2131-F, dated 19 February 1925*. The Government of India, in the resolution referred to, abolished the previous system and were prepared themselves to find the capital required for the construction of extensions or branches to the existing main systems. They also expressed their readiness to consider the question of constructing the branch or feeder lines which were not expected to be remunerative from the point of view of railway earnings upon a guarantee against loss from a local Government or Local Authority which might desire to have such lines constructed for purely local reasons or on account of administrative advantages likely to accrue in particular areas. Where contributions had been made by a Local Authority for this purpose, the repayment of such contributions was a first charge on any profits subsequently realized. Even when a Provincial Government was prepared to offer guarantee, the final decision rested with the Government of India. Under the new arrangement introduced in 1925, further construction thus came to be limited by the resources of the Central Government and only seven lines were constructed on guarantees by Provincial Governments. Most of the branch lines owned by the companies have since been acquired by Government on termination of their contracts and integrated with the main lines.

As a result of the recommendations of the Railway Convention Committee 1949, any railway required for the development of the country should be constructed by the Government from its own capital, and the State Government and District Boards are not now encouraged to build branch or feeder railways. Whenever it is decided to construct a branch or feeder line whether remunerative or not, the construction of the line is to be financed entirely by the Central Government without any assistance from the State Governments or other bodies. Further, no more narrow gauge lines are now, as a rule, to be constructed by the Central Government, but if a State Government, Local Authority or a private body asks for permission for the construction of such a line, the proposal will be examined on its merits.

Indian States Railways—A considerable kilometrage of Railways was constructed by the former Indian States either through Agencies of the Companies, Government or the Durbars themselves. The lines in the former Indian States generally belonged to the States themselves. An important exception to this was the Nizam's Guaranteed State Railway Co. The agreements between H.E.H. the Nizam's Government and the Company were determined on 1 April 1930 and thereafter the Nizam's State Railway was also brought under the management of the Hyderabad State. Some of the Railways in the Indian States were fairly large systems, as with the Nizam's State Railway (about 2,253 kilometres in length) the Mysore State Railway (1,146 kilometres), the Jodhpur Railway (1,305 kilometres), and the Bikaner State Railway (1,421 kilometres), all of which ranked as Class I Railways.

By 1949-50, the total kilometrage owned by the former Indian States was about 11,265 kilometres of which about 9,656 kilometres were worked by States themselves and about 1,600 kilometres by the adjoining main line Administrations. The Government of India exercised certain powers of control in matters relating to public safety, and also over the adoption of new routes, but broadly speaking, these undertakings enjoyed a large measure of independence, secured to them by the treaties between the Government of India and the several Indian States.

The sequence in which the different States first began to interest themselves in schemes of railway extensions is approximately as under:—

Baroda, Hyderabad, Bhavnagar, Gondal, Porbander, Jodhpur, Bhopal, Patiala, Morvi, Junagad, Kashmir, Kolhapur, Rajkot, Jetpur, Mysore, Cooch Behar, Gwalior, Mewar, Kotah, Navanagar, Rajpipla, Bikaner, Dhrangadra, Parlakimedi, Cambay, Malerkotla, Jind, Cochin, Travancore, Cutch, Jaipur, Mayurbhanj, Sangli, Dholpur and Bahawalpur.

The rapid integration of the Indian States during 1949-50 resolved in one step the problem of taking over the State Railways. During 1949-50, in consequence of the merger with the Provinces, later Part A States, of the following Indian States, the Railway lines belonging to the States as indicated against each, came to vest in the Government of India, the functional successor to the States in the federal field :—

State	Railways
Baroda	Gaekwar Baroda State Railway
Baria	Piplod Devgad Baria Railway
Cambay	Tarapur Cambay Railway
Cooch Behar	Cooch Behar State Railway
Kolhapur	Kolhapur State Railway
Palanpur	Palanpur Deesa Railway
Rajpipla	Rajpipla State Railway
Sangli	Sangli State Railway

*See appendix E of the Administration Report of Railways in India for the year 1924-5.

With the constitution of the Bhopal and the Cutch States into Centrally Administered Areas, the Bhopal-Parbati and Bhopal-Itarsi Railways and the Cutch State Railway were also similarly taken over by the Government. All these lines increased the route kilometrage of the Government Railways by about a thousand kilometres.

On 1 April 1950, in consequence of the Federal Financial Integration, about 20 remaining Railway lines belonging to the former Indian States (later Part B States), viz., Saurashtra, Rajasthan, Mysore, Madhya Bharat, Hyderabad, Patiala and East Punjab States Union and Travancore-Cochin came to vest in the Central Government as the functional successor to the States in the federal field. The lines which were taken over with effect from 1 April 1950 increased the route kilometrage of Indian Government Railways by over 9,656 kilometres.

The Railways which thus came under the control of the Central Government in addition to those which were already being worked by the Indian Railways, and were later merged into the contiguous Railway systems, were as follows—

Name of Railway	Kilometrage	Date from which taken over by Centre
(*i*) Gaekwar's Baroda State Railways*	1,184	1 August 1949.
(*ii*) Bikaner State Railway	1,421	1 April 1950.
(*iii*) Cutch State Railway	116	1 April 1950.
(*iv*) Dholpur State Railway	89	1 April 1950.
(*v*) Jaipur State Railway	443	1 April 1950.
(*vi*) Jodhpur Railway	1,305	1 April 1950.
(*vii*) Mysore State Railway	1,146	1 April 1950.
(*viii*) Nizam's State Railway	2,213	1 April 1950.
(*ix*) Rajasthan Railway	317	1 April 1950.
(*x*) Saurashtra Railway	2,160	1 April 1950.
(*xi*) Scindia State Railway	473	1 April 1950.

***This was merged with the B.B. & C.I. Railway System from the date of taking over.**

Partition—With the attainment of Independence and partition of the country on 15 August 1947, two of the existing Railway systems, namely, the North Western Railway in the West and the Bengal Assam Railway in the East which fell into both territories, were divided. The North Western Railway had a kilometrage of about 11,074 before Partition, of which 3,034 kilometres fell in India and 8,040 kilometres in Pakistan. Of the 5,721 kilometres of the Bengal Assam Railway 3,125 kilometres were in Indian territory and 2,596 kilometres in Pakistan. The Sind Section of the Jodhpur-Hyderabad Railway, a length of 513 kilometres fell entirely within Pakistan. The portions of the North Western and Bengal Assam Railways in India were either partly added to the other existing lines or partly formed into separate units. Thus the Eastern Punjab Railway and the Assam Railway Administrations came into being as separate units although they were not economical, efficient and self-sufficient systems. An administrative reorganization with a view to securing both efficiency in operation and economy in management was, therefore, a compelling necessity.

Reorganization and Regrouping of Railways—With these changes, the need for establishing a smaller number of major units, reorganizing the internal set-up of each unit with a view to securing large scale economies, and improving and standardizing practices, became even more pronounced than in the past. The different Government Railway systems were regrouped and formed into six Zonal Administrative Units namely—

(*i*) Southern Railway—Route kilometrage 9,682 was formed on 14 April 1951, by the amalgamation of the Madras and Southern Mahratta, the South Indian and the Mysore State Railways;

(*ii*) Central Railway—Route kilometrage 8,735 was formed on 5 November 1951, by the integration of the Great Indian Peninsula, the Nizam's State, the Scindia and the Dholpur State Railways;

(*iii*) Western Railway—Route kilometrage 8,789 was formed on 5 November 1951 by the integration of the Bombay Baroda & Central India Railway (less Delhi-Rewari-Fazilka and Kanpur-Achnera sections, transferred subsequently to Northern and North Eastern Railways respectively on their formation on 14 April 1952), the Saurashtra Railway, the Jaipur State Railway, the Rajasthan Railway, the Cutch State Railway, and Marwar-Phulad section of the Jodhpur Railway;

(*iv*) Northern Railway—Route kilometrage 9,667 was formed on 14 April 1952, by the integration of the Jodhpur, Bikaner State and Eastern Punjab Railways; Lucknow, Moradabad and Allahabad Divisions of the East Indian Railway; and the Delhi-Rewari-Fazilka section of the Western Railway;

(v) Eastern Railway—Route kilometrage 9,120 was formed on 14 April 1952, by the integration of the Bengal Nagpur Railway with the divisions of the East Indian Railway not transferred to the Northern Railway;

(vi) North Eastern Railway—Route kilometrage 7,699 was formed on 14 April 1952, by the integration of the Oudh-Tirhut and the Assam Railways and the Kanpur-Achnera section of the Western Railway.

Subsequently, however, due to heavy work load on the Eastern Railway then existing and further increase expected with the prospective development in the area under the Second Five Year Plan, the Eastern Railway was bifurcated with effect from 1st August 1955 into two zonal Administrative units namely:—

(a) Eastern Railway—Route kilometrage 3,735 to consist of three divisions of the old East Indian Railway not transferred to the Northern Railway and the Sealdah Division of the ex-Bengal Assam Railway.

(b) South Eastern Railway—Route kilometrage 5,470 to consist of the portions of the ex-Bengal Nagpur Railway with slight adjustment in the jurisdiction of the Andhra District.

Further with a view to providing the Eastern most part of India with a suitable Administrative machinery competent to deal promptly and effectively with immediate as well as long term railway problems of all kinds, the location of a full-fledged and viable Railway Administration there was felt and to achieve this end, the North Eastern Railway was bifurcated with effect from 15 January 1958 into two zonal Administrative units namely:—

(a) Northeast Frontier Railway—Route kilometrage 2,778 to consist of the jurisdiction of the former Pandu Region with the exception of a few branch lines.

(b) North Eastern Railway—Route kilometrage 4,949 to consist of the remaining portion of the former North Eastern Railway.

All these eight major Railway systems are now Government-owned and Government-managed, accounting for 56,500 route kilometrage of railways, and in addition, 423 kilometres of more than half a dozen branch lines owned by companies, district boards etc., are operated by these systems.

There still remain, as already referred to earlier, 9 small administrations classified as non-Government Railways, operating in all 662 kilometres of narrow gauge lines, which are owned and managed by branch line companies or district boards.

Administrative Control of Government over Company and District Board Railways—Apart from the financial control over the Company Railways in which Government have financial interest, Government have control over all Company and District Board Railways in certain spheres. By virtue of this control, Government have, *inter alia*, the authority to enforce compliance with the safety regulations and to fix maximum and minimum rates and fares for conveyance of traffic over the whole or any part of a Railway and prescribe the conditions in which such rates will apply as prescribed in the Indian Railways Act 1890.

Features of Contracts with Companies which still own and manage the Railways—The main features of the contracts with Companies which still own and manage the Railways are as follows:—

(a) All contracts are terminable at the option of the Government (and in some cases, of the Local District Board concerned) at specified dates or in certain other circumstances, *e.g.*, when it is desired to convert the Railway into a line of through communication, etc.

(b) Where the right of purchase vests in the Government but the Railway company receives no financial assistance from Government, all proposals for capital expenditure of the Company are subject to Government's approval. (This is to guard against the incurring of any unnecessary expenditure by the company which would increase the ultimate purchase price payable by Government). Where, however, the Railway company shares the surplus profits with Government or Government has to pay subsidy in order to bring the company's net earnings to the level of guaranteed interest and where the purchase price payable by Government is determined on the basis of a multiple of the average net earnings subject to certain minimum and maximum of capital outlay, both the Capital and Revenue expenditure of the companies are subject to Government's approval.

(c) In the case of all Railway companies in which Government has financial interest, the contracts entitle the Government to appoint a Government Director on the Boards of the Companies, with a power of veto on all proceedings of the Boards.

NOTE—All contracts made by the Secretary of State in Council before the commencement of the Constitution of India referred to in this publication will, as from the commencement of the said Constitution, have effect as if they had been made on behalf of the President vide Article 294 (b) of the Constitution.

(3) THE SEPARATION OF RAILWAY FINANCE FROM GENERAL FINANCE

The Acworth Committee Report recommended

"that the Finance Department should cease to control the internal finance of the railways; that the railways should have a separate budget of their own, be responsible for earning and expending their own income, and for providing such net revenue as is required to meet the interest on the debt incurred or to be incurred by the Government for railway purposes; and that the railway budget should be presented to the Legislative Assembly, not by the Finance Member of Council, but by the Member in charge of Railways''.

The financial transactions of the Railways would, however, continue to be subject to the same control as those of any other Department of Government. The important distinction, however, was that whereas arrangements for the financing of all Departments had been considered together, the committee proposed that railways should, in future, in respect both of

capital and revenue expenditure, remain apart, that there should be a definite programme of capital expenditure and in consequence, a definite programme of borrowing for railway purposes; and finally, that the net profits earned should stand outside the general revenues of the country and ordinarily be either devoted to the provision of additional railway facilities or to reduction of rates and fares. The report received in the month of August 1921, was considered by a Committee of both Houses of Legislature—the Railway Finance Committee—presided over by the Finance Member constituted under a Resolution of the Legislative Assembly on 13 September 1921. On their recommendation, the Legislative Assembly agreed in March 1922 with their proposal in favour of a guaranteed quinquennial programme of a definite sum of capital expenditure. The Committee also recommended the establishment of a Depreciation Reserve Fund. Meanwhile, the Indian Retrenchment Committee had made certain recommendations, one of which being to require an average return of at least 5·5 per cent on the capital-at-charge of the State-owned Railways. The whole question of separation of the finance was examined and towards the close of the year 1923-4, Government put forward proposals for the separation of railway finance from the general finance of the country. A Committee of the Legislative Assembly considered this question, and the final recommendations emerged in the form of a resolution of the Indian Legislative Assembly on 20 September 1924, separating the Railway Budget from the General Budget. The object of the separation was—

(*i*) to relieve the General Budget from the violent fluctuations caused by the incorporation therein of the Railway estimates; and

(*ii*) to enable the Railways to carry out a continuous policy based on the necessity of making a definite return to General Revenues, on the money expended by the Government on Railways.

The Convention was revised from time to time, namely, in 1943, 1949, 1954 and 1960. The texts of the Resolutions containing the provisions are reproduced in the Appendix D. But the main provisions of the original Convention and the subsequent revisions are summarized below:

Convention of 1924—

(1) *Annual Railway Contribution*—The Railway finances were separated from the general finances of the country and the general revenues received a definite annual contribution from Railways which was a first charge on the net receipts of Railways.

(2) *Amount of Railway Contribution to General Revenues*—The contribution was based on the capital-at-charge and the working results of commercial lines, and was a sum equal to one per cent on the capital-at-charge of commercial lines (excluding capital contributed by Indian States and District Boards, etc.) at the end of the penultimate financial year plus one-fifth of any surplus profits remaining after payment of this fixed return, subject to the condition that if in any year Railway revenues were insufficient to provide the percentage of one per cent on the capital-at-charge, surplus profits in the next or subsequent years were not deemed to have accrued for purposes of division until such deficiency had been made good.

(3) *Loss due to Strategic Railways*—The interest on the capital-at-charge, and the loss in working of strategic lines was borne by general revenues and was consequently deducted from the contribution so calculated in order to arrive at the net amount payable from Railway to general revenues each year.

(4) *Railway Reserve Fund*—Any surplus, remaining after this payment to general revenues, was transferred to a Railway reserve; provided that if the amount available for transfer to the Railway reserve exceeded in any year three crores of rupees, only two-thirds of the excess over three crores was transferred to the Railway reserve and the remaining one-third accrued to General revenues.

(5) *Objects of the Railway Reserve Fund*—The Railway Reserve Fund could be used to secure the payment of the annual contribution to general revenues; to provide, if necessary, for arrears of depreciation and for writing down and writing off capital and to strengthen the financial position of Railways in order that the services rendered to the public could be improved and rates reduced.

(6) *Temporary Borrowing*—The Railway Board were authorized, subject to such conditions as prescribed by the Government of India, to borrow temporarily from capital or from the reserve for the purpose of meeting expenditure for which there was no provision or insufficient provision in the revenue budget, subject to the obligation to make repayment of such borrowings out of the revenue budgets of subsequent years.

(7) *The Railway Standing Finance Committee of the Legislature*—A Standing Finance Committee for Railways consisting of one nominated official member of the Legislative Assembly who was the Chairman and eleven members elected by the Legislative Assembly from their body, examined the estimates of Railway expenditure which the Railway Board had to place before it on some date prior to the date for the discussion of the demands for grants for Railways in the Assembly.

(8) *Railway Depreciation Fund*—The expenditure chargeable till 31 March 1924 to 'programme revenue' was shown from 1 April 1924, under a Depreciation Fund created to meet the cost of replacements and renewals.

(9) *Demands for Grants*—The Railway Budget would be presented to the Legislative Assembly in advance of the General Budget, separate days being allotted for its discussion, the Member in charge of Railways making a general statement on Railway accounts and working. The expenditure proposed in the Railway Budget, including expenditure from the Depreciation Fund and the Railway Reserve would be placed before the Legislative Assembly in the form of 'Demands for Grants'.

(10) *Form of Budget*—The form of the budget, the detail it gave and the number of demands for grants into which the total vote was divided, were to be considered by the Railway Board in consultation with the Standing Finance Committee for Railways.

Revision of Convention—The Resolution of 1924 had provided for a review of the arrangements detailed in the preceding paragraphs after the first period of three years. This could not be completed as the Committee of the Legislature appointed for the purpose became *functus officio* and the enquiry was postponed in view of the constitutional changes then impending.

During the first five years after the Separation, 1924-5 to 1928-9, the financial results of the Indian Railways fulfilled the anticipations of the Convention. Besides payment of full contribution and interest charges to General Revenues, the Railway Depreciation Fund and Reserve Fund received credits amounting to Rs. 55·29 crores and Rs. 18·81 crores respectively. But after the depression set in from 1930-1, the Railway Reserve was reduced to an exiguous amount with the result that with effect from 1931-2, the payment of contribution to general revenues ceased, and amounts had to be withdrawn from the Depreciation Reserve Fund to meet even the interest charges. The actual withdrawals from the Railway Reserve Fund during the three years i.e. 1929-30 to 1931-2 were as under:—

(In crores of rupees)

Year	Withdrawals from Railway Reserve Fund to meet: loss in working i.e. part of interest charges	contributions to general revenues
1929-30	..	2·08
1930-1	5·19	5·74
1931-2	4·95	..
Total	17·96	

A moratorium was declared in 1937 (which was extended in 1939) that Railway revenues were not liable to repay to the Depreciation Reserve Fund the balance outstanding on 1 April 1937 of loan taken from the Fund to meet Railway deficits or to pay to general revenues any contribution or deficiency in contribution due in respect of the period beginning on 1 April 1931 and ending on 31 March 1939. At the end of 1939-40 the unliquidated liabilities of railways amounted to Rs. 66 crores. Of this Rs. 30·29 crores represented the net amount of loans taken from the depreciation fund and the balance represented the contributions to general revenues which remained unpaid from 1931-2 to 1936-7 fully, and partly during the years 1937-8, 1938-9 and 1939-40, the details being as follows:—

(In crores of rupees)

Year	Loans from Depreciation Fund	Unpaid contribution to general revenues
1931-2	4·25	5·36
1932-3	10·23	5·23
1933-4	7·96	5·21
1934-5	5·06	5·04
1935-6	4·00	4·99
1936-7	(−) 1·21	4·91
1937-8	..	1·58
1938-9	..	3·09
1939-40	..	0·30
	30·29	35·71
Total	66·00	

The undischarged liabilities of Railways to general revenues and the loans taken from the Depreciation Reserve Fund were, however, cleared by the end of 1942-3 from out of the surpluses realized during the early years of World War II.

Revision of the Convention, 1943—By a resolution passed by the Legislative Assembly on 2 March 1943, the basis of contribution to the general revenues laid down in the resolution of 1924, was abandoned with effect from 1 April 1943 and it was provided that for the year 1943-4, the surplus on commercial lines after repaying any outstanding loan from the Depreciation Reserve Fund, was to be distributed between the Railway reserve and general revenues in the proportion of 1 : 3, the loss if any, on strategic lines being recovered from the general revenues and for the future, until a new Convention was adopted the allocation of the Railway surplus was to be decided each year on a consideration of the needs of the Railway and general revenues.

A Committee of the Legislature was appointed in pursuance of the motion of the Legislative Assembly on 23 March 1943 to consider the revision of the Convention, but as it was impossible to foresee the conditions which would prevail after the war, it was suggested that the permanent revision of the Convention should be postponed to a later date.

Another Committee called Railway Convention Committee 1947, was appointed in March 1947 in deference to the interest evinced by the Legislature, but it became *functus officio* due to the Partition. Thus a review of the original arrangements, though contemplated, had, for one reason or another, been postponed till a new Convention of 1949 was adopted with effect from 1 April 1950.

Convention of 1949—As a result of the recommendations of the Railway Convention Committee, 1949, which was appointed by the Legislative Assembly on 4 April 1949, to review the working of the "Separation Convention" of 1924, the Assembly adopted a resolution on 21 December 1949, in supersession of all the previous resolutions on the subject. The main features of this resolution which was operative from 1 April 1950 are detailed below—

(*i*) *Annual Railway Dividend*—The Railway finance should continue to remain separated from the general finance of the country but the general tax-payer should have the status of the sole share holder in the Railway undertaking. The general revenues should receive only a fixed annual dividend from Railways.

(*ii*) *Amount of Railway Dividend to General Revenues*—For a period of 5 years commencing from 1950-1, the annual dividend should be a sum calculated at the rate of 4 % on the capital invested out of general revenues in the Railway undertaking as computed annually, provided that no dividend should be payable on the capital invested in unremunerative strategic lines. This rate of dividend was subject to review by a Committee to be appointed by the Parliament towards the end of the aforesaid period which would suggest, for the years following it, any adjustment considered necessary in the rate, having regard to the revenue returns of the Railway undertaking, the average borrowing rate of Government and any other relevant factors.

(*iii*) *Revenue Reserve Fund*—The existing Railway reserve should be renamed the Revenue Reserve Fund and utilised primarily for maintaining the agreed payments to general revenues and for making up any deficit in the working of the Railways.

(*iv*) *Development Fund*—A Development Fund should be constituted for financing expenditure for the following purposes (the existing Betterment Fund* being merged in this new fund)—

(*a*) Passenger Amenities;

(*b*) Labour Welfare; and

(*c*) Railway Projects which are necessary, but unremunerative.

(*v*) *Depreciation Reserve Fund*—For meeting the cost of replacement and renewal of assets, the Depreciation Reserve Fund should receive, for the next five years, a minimum contribution of Rs. 15 crores per annum chargeable to the working expenses of the Railway undertaking.

(*vi*) *Distribution of Railway Surplus*—The Railway surplus should be available for distribution amongst the Revenue Reserve Fund, the Development Fund, and the Depreciation Reserve Fund to the extent the last named needs strengthening over and above the minimum annual contribution.

Provision for the constitution of the Standing Finance Committee for Railways, presentation of demands for grant and form of budget generally continued on the lines of the Convention of 1924.

As a result of the decision of Government taken in 1952, the practice of constituting Standing Committees of Parliament (including the Standing Finance Committee for Railways) was, however, abandoned. Consequently, the annual estimates of Railway expenditure and the form of budget which used to be placed before the Standing Finance Committee for Railways for their approval are submitted for the prior approval of the Minister for Railways through the Financial Commissioner for Railways before presentation to Parliament, in such a manner as is prescribed in this behalf.

Convention of 1954—As contemplated in the Convention of 1949, a Railway Convention Committee 1954 representing both the Houses of Parliament was constituted in pursuance of a resolution adopted by the Lok Sabha on 12 May 1954 and concurred in by the Rajya Sabha on 14 May 1954 to review the rate of dividend payable by the Railway Undertaking to General Revenues as well as other ancillary matters. The Committee submitted its Report on 30 November 1954. The recommendations of the Committee were fully accepted by Government and approved by Parliament through a Resolution adopted on 16 December 1954 by the Lok Sabha and on 21 December 1954 by the Rajya Sabha.

Principal Provisions of the Convention of 1954—The main recommendations which shall be effective for a period of five years commencing from 1 April 1955 are readily indicated. Firstly, the present annual rate of dividend (namely, 4 per cent) paid to the general revenues on the capital invested should remain unaltered for another period of five years commencing from 1 April 1955, the rate of dividend being subject to review by a Parliamentary Committee towards the end of the next quinquennium when the Ministry of Railways shall also submit a review on the general working of the railways during these five years. Certain minor adjustments were recommended in the matter of calculation of capital-at-charge for arriving at the total dividend payable. These minor adjustments are (*i*) that on the element of over-capitalization in the loan capital, the rate of dividend will be equal to the average rate of interest charged to the commercial departments and (*ii*) that a moratorium will be granted in respect of the dividend payable on the capital invested on the new lines during the period of construction and up to the end of the fifth year of their opening for traffic. The deferred amount in respect of this period of moratorium will be calculated at the average rate of interest charged to the commercial departments and this will be paid from the sixth year onwards in addition to the current dividend out of the net income of the new lines.

Secondly, the annual contribution to the Depreciation Reserve Fund should be raised from Rs. 30 crores to Rs. 35 crores during the five years commencing with 1955-6; the replacement of assets created out of the Development Fund being also met out of the Depreciation Reserve Fund and the scope of expenditure from the Development Fund should be widened to include *inter alia* amenities for all "users of railway transport" instead of "railway passengers" only.

The contribution to this Fund for five years commencing from 1955-6 was later increased from Rs. 35 crores to Rs. 45 crores with the approval of the Parliament.

Convention of 1960—The 1954 Convention, which covered the period 1955—1960, was, however, extended by one year *i.e.*, up to 31st March 1961, with the approval of the Parliament, to synchronise convention periods with the future plan periods so that a reasonably reliable forecast of Railway Finances for next 5 years, as framed for the purpose of each plan would, in future, be available to successive Convention Committees.

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*The Railway Betterment Fund was started with effect from 1 April 1946 and originally designed to relieve capital of charges relating to works for the provision of amenities for passengers and staff and of expenditure on operative improvements costing not more than Rs. 3 lakhs each, which were not likely to produce sufficient return to cover service charges and interest. To start with, a sum of Rs. 12 crores was transferred to the fund from the Railway Reserve Fund (since renamed Revenue Reserve Fund) and further credits to the fund consisted of annual appropriations from the surplus. With effect from 1 April 1949 the scope of the fund was restricted to meet *only* the expenditure on works connected with the provision of amenities for passengers.

Principal provisions of the Convention of 1960—The main recommendations which shall be operative for the quinquennial period 1961—6 are that (*i*) the mode of contribution, viz. a fixed rate of dividend by the Railways to General Revenues does not call for a change in the next five years and the rate of dividend paid by the Railways to General Revenues should be increased from 4 per cent according to earlier conventions to 4·25 per cent, (*ii*) the annual loss in the working of strategic lines should be borne by General Revenues, (*iii*) the Capital-at-Charge of the Northeast Frontier Railway, other than the clearly strategic portion thereof, should be regarded as unproductive and the rate of dividend payable on the capital-at-charge should be at the average borrowing rate of the Government, till such time the line becomes productive or the next Convention Committee reviews the position whichever is earlier, (*iv*) the total contribution to the Depreciation Fund should be Rs. 350 crores during the five year period 1961—6, (*v*) the existing rules of allocation of Railway expenditure between Capital, Revenue, Depreciation Reserve Fund and Development Fund might be retained without any modification during the next five years, (*vi*) the existing facility of providing temporary loans from General Revenues to finance the Railway Development Fund in case the net Revenue surplus is not able to meet in full the requirements of the fund, may be continued during the quinquennium 1961—6, (*vii*) the existing passenger tax should be merged with passenger fares and a fixed amount of Rs. 12·50 crores per year should be paid in lieu thereof during the period 1961—6 and (*viii*) the outstanding liability of the Railway Development Fund to the General Finance as on 31 March 1961 should be liquidated by an *ad-hoc* adjustment from Development Fund to capital of the cost of all new lines under construction on 1 April 1955 hitherto charged to Development Fund; any liability still remaining could be repaid from out of the balances in the Revenue Reserve Fund, so that the Railways could start on the Third Plan period with a clean slate in regard to this liability.

It is also clarified that the deferred dividend on the new lines should be paid from the sixth year onwards only if the net income of the new lines leaves a surplus after payment of the current dividend.

Modifications of the convention Resolution of 1960—The following modifications were approved by Parliament when voting the Railway Budget for 1963-64:

(*i*) The rate of dividend to be paid by the Railways to General Revenues should be 4·50 per cent in 1963-64 and in the latter two years of the Third Plan Period.

(*ii*) The total contribution to the Depreciation Reserve Fund should be Rs. 380 crores during the next quinquennium by enhancing the appropriation by Rs. 10 crores in 1963-64 and by similar additions in each of the latter two years of the Third Plan.

Financial results and various fund balances of Government Railways from 1924-5—The financial results of the working of Government Railways as also the details of the annual transactions and balances in various Railway funds to the end of each year from 1924-5 are given in tables below. The amount in various Railway funds together with interest thereon which is also credited to the funds, remain in deposit with the Central Government except the part of the amount invested out of the Revenue Reserve Fund in securities and loans to Branch Line Companies.

Financial results of Government Railways from 1924-5

Year	Route kilo-metrage at the end of each year (excluding worked lines)	Total capital-at-charge at the end of each year (In crores) (Rs.) *	Total traffic receipts excluding earnings of worked lines (In crores) (Rs.)	Net revenue (In crores) (Rs.) †	Interest charges (In crores) (Rs.)	Contri-bution to general revenues (In crores) (Rs.)	Surplus(+) or deficit(—) (Rly's share) (In crores) (Rs.)	Allocation of Railway's share of surplus or deficit to different funds: Revenue (Railway) Reserve Fund (In crores) (Rs.)	Development Fund (In crores) (Rs.)	Depreciation Reserve Fund (In crores) (Rs.)
1	2	3	4	5	6	7	8	9	10	11
1924-5	43,428	635	100·13	37·06	23·90	6·78	+ 6·38	6·38	..	..
1925-6	43,597	654	98·94	34·09	24·81	5·49	+ 3·79	3·79	..	..
1926-7	44,521	681	98·42	33·37	25·87	6·01	+ 1·49	1·49	..	..
1927-8	45,200	714	103·43	38·12	27·27	6·28	+ 4·57	4·57	..	..
1928-9	46,850	739	103·73	37·14	29·33	5·23	+ 2·58	2·58	..	..
1929-30	49,693	770	102·70	34·50	30·46	6·12	— 2·08	— 2·08	..	..
1930-1	50,207	783	95·10	27·53	32·72	5·74	— 10·93	— 10·93	..	..
1931-2	50,920	790	86·63	23·87	33·07	§	— 9·20	— 4·95	..	— 4·25
1932-3	50,923	789	84·43	22·68	32·91	§	— 10·23	..	..	—10·23
1933-4	50,926	787	86·63	24·62	32·58	§	— 7·96	..	..	— 7·96
1934-5	50,886	787	90·20	26·74	31·80	§	— 5·06	..	..	— 5·06
1935-6	51,068	789	90·65	27·39	31·39	§	— 4·00	..	..	— 4·00
1936-7	51,063	789	95·49	32·02	30·81	§	+ 1·21	..	..	1·21
1937-8	47,765	754	95·01	32·02	29·26§	2·76	..	..	..	..
1938-9	47,838	755	94·48	30·67	29·30§	1·37	..	..	..	..
1939-40	47,847	759	97·65	33·44	29·11§	4·33	..	..	..	..
1940-1	33,130	761	111·94	47·14	28·68	12·16	+ 6·30	6·30	..	..
1941-2	47,097	755	129·18	56·52	28·44	20·17	+ 7·91	..	..	(a) 7·91
1942-3	47,295	773	150·20	73·11	28·04	20·13	+ 24·94	8·86	..	(a)16·08
1943-4	49,796	781	181·54	79·37	28·53	37·64	+ 13·20	(b)—6·30 13·20	..	(a) 6·30 ..
1944-5	49,970	787	211·99	77·34	27·45	32·00	+ 17·89	17·89	..	..
1945-6	50,176	797	220·78	65·38	27·18	32·00	+ 6·20	6·20	..	..
1946-7	50,747	808	199·24	35·04	26·52	5·40	+ 3·12	0·12	..	3 00
1947-8										
1-4-47 to 14-8-47		Not available								
15-8-47 to 31-3-48‡	39,962	667	99·07	10·71	13·29	..	— 2·58	— 2·58	..	..
1948-9	40,283	702	208·68	42·34	22·36	7·34	+ 12·64	..	0·84	11·80
1949-50	42,345	736	231·40	37·77	23·18	7·00	+ 7·59	..	..	7·59
					Payment in lieu of tax on passenger fares	Dividend				
1950-1	52,994	827	262·00	47·56	..	32·51	+15·05	5·05	10·00	..
1951-2	53,029	850	289·74	61·75	..	33·41	+28·34	18·34	10·00	..
1952-3	53,374	857	269·67	47·18	..	33·99	+13·19	1·19	12·00	..
1953-4	53,910	869	273·42	36·92	..	34·36	+ 2·56	..	2·56	..
1954-5	54,393	902	286·16	44·06	..	34·96	+ 9·10	..	9·10	..
1955-6	54,523	969	315·68	50·34	..	36·12	+14·22	7·14	7·08	..
1956-7	54,734	1,072	346·99	58·38	..	38·16	+20·22	..	20·22	..
1957-8	55,009	1,222	379·25	57·78	..	44·40	+13·38	..	13·38	..
1958-9	55,290	1,357	389·71	59·32	..	50·39	+8·93	..	8·93	..
1959-60	55,502	1,432	421·87	74·55	..	54·43	+20·12	..	20·12	..
1960-1	55,793	1,521	456·27	87·87	..	55·86	+32·01	..	32·01	..
1961-62	55,921	1,683	499·92	99·75**	12·50	62·85	+24·40	..	24·40	..
1962-63	56,304	1,897	566·24	123·32**	12·50	68·76	+42·06	..	42·06	..
1963-64	56,500	2,160	632·73	145·19**	12·50	83·45	+49·24	..	49·24	..

NOTE—1. The Burma and Pakistan Railways excluded with effect from 1 April 1937 and 15 August 1947 respectively and the former Indian States Railways integrated with Government Railways during 1949-50 and 1950-1.

2. The figures of Capital-at-charge are provisional pending closing of prepartition accounts and the finalization of the balances of the ex-States Railways brought forward on 1 April 1950.

3. The figures of gross receipts upto 1951-2 are inclusive of the freight charges on the carriage of railway stores and fuel which are treated as non-revenue traffic with effect from 1 April 1952.

*Includes capital-at-charge of strategic lines and the amounts contributed by Companies, District Boards and Indian States.

**Includes the element of tax on passenger fares merged with passenger fares with effect from the 1st April 1961, in lieu of which an amount of Rs. 12·50 crores is being paid to General Revenues every year, as indicated in column 6.

†After deducting operating expenses, depreciation fund, misc. charges, surplus profit payable to companies, payments to worked lines, etc.

‡Figures are provisional pending closing of the pre-partition accounts and relate to the Indian Government Railways as they stood after Partition.

§The contributions to General Revenues remained unpaid from 1931-2 to 1936-7 fully and partly during the years 1937-8 to 1939-40 as under. The entire arrears of contribution amounting to Rs. 35·71 crores having been made good during 1940—3.

Years	Rs. (in crores)	Years	Rs. (in crores)
1931-2	5·36	1937-8	1·58
1932-3	5·23	1938-9	3·09
1933-4	5·21	1939-40	0·30
1934-5	5·04		
1935-6	4·99	Total	35·71
1936-7	4·91		

(a) Repayment of withdrawals to meet deficits during 1931-2 to 1936-7.

(b) Transferred to Depreciation Reserve Fund.

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Depreciation Reserve Fund

(In lakhs of rupees)

Year	Appropriation to the Fund	Withdrawals towards renewals and replacements	Net accretion to the Fund during the year	Nominal closing balance	Temporary loans to meet deficit	Actual closing balance *
1924-5	10,35	7,29	3,06	3,06	..	3,06
1925-6	10,67	7,99	2,68	5,74	..	5,74
1926-7	10,89	8,05	2,84	8,58	..	8,58
1927-8	11,38	10,05	43	9,01	..	9,01
1928-9	12,00	9,60	2,40	11,41	..	11,41
1929-30	12,59	11,76	83	12,24	..	12,24
1930-1	13,07	11,39	1,68	13,92	..	13,92
1931-2	13,46	8,26	5,20	19,12	4,25	14,87
1932-3	13,77	6,35	7,42	26,54	10,23	12,06
1933-4	13,56	8,07	5,49	32,03	7,96	9,59
1934-5	13,72	8,66	5,06	37,09	5,06	9,59
1935-6	13,26	9,16	4,10	41,19	4,00	9,69
1936-7	13,17	7,88	5,29	46,48	—1,21	16,19
1937-8	12,59	(*a*) 7,69	4,90	(*b*) 49,90	..	(*b*) 19,61
1938-9	12,56	7,08	5,48	55,38	..	25,09
1939-40	12,59	6,53	6,06	61,44	..	31,15
1940-1	12,64	7,19	5,45	66,89	..	36,60
1941-2	12,68	5,35	7,33	74,22	—7,91	51,84
1942-3	(*c*) 12,80	4,95	7,85	82,07	(*d*) —22,38	82,07
1943-4	16,87	6,64	10,23	92,30	..	92,30
1944-5	17,01	8,18	8,83	(*f*) 1,02,21	..	(*f*) 1,02,21
1945-6	(*e*) 17,25	12,01	5,24	1,07,45	..	1,07,45
1946-7	13,21	12,37	84	1,08,29	..	1,08,29
1947-8—						
1-4-47 to 14-8 47	6,86	2,66	4,20	(*g*) 1,12,49	..	(*g*) 1,12,49
15-8-47 to 31-3-48	6,81	3,27	3,54	(*h*) 95,74	..	(*h*) 95,74
1948-9	(*i*) 23,11	17,28	5,83	1,01,57	..	1,01,57
1949-50	19,17	11,73	7,44	1,09,01	..	1,09,01
1950-1	33,59	26,63	6,96	(*j*) 1,23,65	..	(*j*) 1,23,65@
1951-2	(*k*) 33,79	35,87	—2,08	1,22,02	..	(*l*) 1,22,02@
1952-3	(*m*) 34,42	40,89	—6,47	1,16,36	..	(*n*) 1,16,36@
1953-4	(*o*) 33,97	38,02	—4,05	1,12,79	..	(*p*) 1,12,79@
1954-5	(*q*) 33,72	45,82	—12,10	1,00,69	..	(*q*) 1,00,69@
1955-6	(*r*) 48,67	45,89	+2,78	1,03,47	..	1,03,47@
1956-7	(*s*) 48,90	43,68	+5,22	1,03,14	..	(*t*) 1,03,14@
1957-8	49,38	63,62	—14,24	(*v*) 88,89	..	(*v*) 88,89@
1958-9	48,40	80,72	—32,32	56,70	..	(*w*) 56,70@
1959-60	47,96	68,36	—20,40	37,30	..	(*x*) 37,30@
1960-1	46,64	64,04	—17,40	19,80	..	(*z*) 19,80@
1961-62	(*aa*) 67,63	58,23	+9,40	29,19	..	29,19@
1962-63	(*ab*) 69,02	75,37	—6,35	22,84	..	22,84@
1963-64	(*ac*) 82,57	72,40	+10,17	32,97	..	32,97@

*The closing balances from 1933-4 to 1941-2 include Rs. 9 lakhs on account of loans to Branch Line Companies and those from 1937-8 to 1941-2 also include Rs. 31 lakhs on account of investments in Branch line shares. In 1942-3 these amounts were transferred to the Railway Reserve Fund Investment Account.

@ These figures are provisional as the balances of the ex-States Railways merged therein have not yet been finalised.

(*a*) Includes Rs. 32 lakhs written off on capital account of abandoned assets.

(*b*) Excludes Rs. 1,48 lakhs, balance for Burma Railways.

(*c*) Includes Rs. 23 lakhs tranferred from Bengal and North Western and Rohilkund and Kumaon Railways' Renewal suspense.

(*d*) Includes Rs. 6,30 lakhs transferred from the Railway Reserve Fund.

(*e*) Includes Rs. 20 lakhs recovered from the Bengal and North Western Company on account of overage rolling stock.

(*f*) Includes Rs. 1,08 lakhs transferred from Renewal Reserve Fund for permanent-way and rolling-stock of the Bengal Nagpur, Madras and Southern Mahratta and South Indian Railways.

(*g*) Includes Rs. 20,30 lakhs, the estimated balance relating to Pakistan Railways.

(*h*) Excludes Rs. 20,30 lakhs, the estimated share less 1·19 lakhs on account of abandoned assets relating to Pakistan Railways.

(*i*) Includes Rs. 11,80 lakhs appropriated from the surplus.

(*j*) Includes Rs. 7,67 lakhs (Provisional) on account of Indian States Railways taken over from 1-4-1950. Difference of 1 is due to rounding off.

(*k*) Includes Rs. 3,58 lakhs on account of interest on the balance and 21 lakhs on account of contribution relating to Chittaranjan Locomotive Works.

(*l*) Includes Rs. 8,12 lakhs (Provisional) on account of ex-Indian States Railways taken over from 1-4-1950.

(*m*) Includes Rs. 4,09 lakhs on account of interest on the balance and Rs. 33 lakhs on account of contribution relating to Chittaranjan Locomotive Works.

(*n*) Includes Rs. 8,93 lakhs on account of ex-Indian States Railways taken over from 1-4-1950.

(*o*) Includes Rs. 3,61 lakhs on account of interest on balance and Rs. 36 lakhs on account of contribution relating to Chittaranjan Locomotive Works.

(*p*) Includes Rs. 9,41 lakhs on account of ex-Indian States Railways taken over from 1-4-1950.

(*q*) Includes Rs. 3,35 lakhs on account of interest on balance and Rs. 37 lakhs on account of contribution relating to Chittaranjan Locomotive Works.

(*r*) Includes Rs. 3,26 lakhs on account of interest on balance and Rs. 41 lakhs on account of contribution relating to Chittaranjan Locomotive Works.

(*s*) Includes Rs. 3,27 lakhs on account of interest on balance and Rs. 63 lakhs on account of contribution relating to Chittaranjan Locomotive Work and Integral Coach Factory.

(*t*) Excludes Rs. 2,76 lakhs on account of difference between *ad hoc* and revised balances on 15 August 1947 and Rs. 1,62 lakhs due to downward adjustment of D.R.F. balance of ex-Mysore State Railway taken over on 1 April 1950 and Rs. 1,17 lakhs on account of interest thereon.

(*v*) Excludes one lakh on account of difference between the *ad hoc* balance and further revised balance as on 15th August 1947.

(*w*) Includes Rs. 13 lakhs on account of difference due to revision of prepartition balances as on 15 August 1947 adopted during the year without financial adjustments.

(*x*) Includes Rs. 1,00 lakhs on account of difference due to pre-partition balance as on 15-8-47 adopted during the year without financial adjustments.

(*z*) Excludes Rs. 10 lakhs on account of difference due to revision of pre-partition balances as on 15-8-47 adopted during the year.

(*aa*) Includes Rs. 86 lakhs on account of interest on balance and Rs. 1,77 lakhs on account of contribution relating to the Chittaranjan Locomotive Works and the Integral Coach Factory.

(*ab*) Includes Rs. 93 lakhs on account of interest on balance and Rs. 1,09 lakhs on account of contribution relating to the Chittaranjan Locomotive Works and the Integral Coach Factory.

(*ac*) Includes Rs. 1,06 lakhs on account of interest on balance and Rs. 1,55 lakhs on account of contribution relating to the Chittaranjan Locomotive Works and the Integral Coach Factory.

Revenue (Railway) Reserve Fund

(In lakhs of rupees)

Year	Appropriation to the Fund	Withdrawal from the Fund	Net accretion to the Fund during the year	Closing balance *
1924-5	6,38	(a) 38	6,00	6,00
1925-6	3,79	..	3,79	9,79
1926-7	1,49	..	1,49	11,28
1927-8	4,57	..	4,57	15,85
1928-9	2,58	..	2,58	18,43
1929-30	..	2,08	—2,08	16,35
1930-1	..	10,93	—10,93	5,42
1931-2	..	4,95	—4,95	47
1932-3	..	..	..	47
1933-4	..	..	..	47
1934-5	..	..	..	47
1935-6	..	..	..	47
1936-7	..	..	..	47
1937-8	(b) 1	..	1	48
1938-9	..	..	..	48
1939-40	..	..	..	48
1940-1	(c) 6,31	90	5,41	5,89
1941-2	..	—90	90	6,79
1942-3	8,86	(d) 6,30	2,56	9,35
1943-4	13,20	..	13,20	22,55
1944-5	17,89	2,96	14,93	37,48
1945-6	6,20	5,55	65	38,13
1946-7	(b) 13	(e) 15,25	—15,12	(f) 23,02
1947-8 (1-4-47 to 14-8-47)	..	(g) 13,60	—13,60	9,42
1947-8 (15-8-47 to 31-3-48)	..	(h) 2,58	—2,58	6,84
1948-9	(i) 3	5	—2	6,82
1949-50	..	..	..	6,82
1950-1	5,40	—1	5,41	(j) 13,58@
1951-2	19,12	—18	19,30	(l) 33,72@
1952-3	(m) 2,26	—4	2,30	(n) 36,05@
1953-4	(o) 1,13	..	1,13	(n) 37,18@
1954-5	(o) 1,18	..	1,18	38,36@
1955-6	(q) 8,51	—2	8,53	46,89@
1956-7	(v) 1,52	..	1,52	(s) 48,07@
1957-8	(t) 1,61	..	1,61	49,68@
1958-9	1,09	..	1,09	(w) 49,38@
1959-60	1,90	..	1,90	(x) 51,60@
1960-1	1,84	..	1,84	53,44@
1961-62	1,93	..	1,93	55,37@
1962-63	2,02	..	2,02	57,39@
1963-64	(aa) 1,79	..	1,79	(ab) 58,57@

*The closing balances include 47 lakhs from 1925-6 to 1936-7, 48 lakhs from 1937-8 to 1939-40, 43 lakhs from 1940-1 to 1941-2, 83 lakhs from 1942-3 to 1943-4, 90 lakhs in 1944-5, 83 lakhs in 1945-6, 52 lakhs in 1946-7, 26 lakhs from 1947-8 to 1950-1, 28 lakhs in 1951-2, 40 lakhs in 1952-53 and 46 lakhs in 1953-4, on account of investments in shares of, and loans to, branch companies.

@ These figures are provisional as the balances of the ex-States' Railways merged therein have not yet been finalized.

(a) Represents amount utilised to write down the difference between the book values and the current market price of stores.

(b) Includes Rs. 1 lakh profit realised on investment in branch line shares cancelled.

(c) Includes one lakh profit realized on cancellation of investments in branch line shares

(d) Transferred to Depreciation Reserve Fund.

(e) Includes Rs. 12 crores transferred to Betterment Fund.

(f) Difference of 1 is due to rounding.

(g) To meet Railway deficit.

(h) To meet Railway deficit.

(i) Represents profit accrued on account of cancellation of investments in branch line shares.

(j) Includes Rs. 1,35 lakhs (Provisional) on account of Indian States' Railways, taken over from 1-4-1950.

(l) Includes Rs. 2,19 lakhs (Provisional) on account of Indian States' Railways taken over from 1-4-1950.

(m) Includes Rs. 1,07 lakhs on account of interest on balance and dividend etc. on investments in shares of and loans to Branch Line Companies

(n) Includes Rs. 2,22 lakhs (Provisional) on account of ex-Indian States' Railways, taken over on 1-4-1950.

(o) Represents interest on balance and dividend etc. on investments in shares of and loans to Branch Line Companies.

(q) Includes Rs. 137 lakhs on account of Interest on balance and dividend, etc., on investments.

(s) Excludes Rs. 7 lakhs on account of difference between *ad hoc* and revised balances on 15 August 1947 and Rs. 21 lakhs representing 25 per cent share of the balances in respect of ex-Scindia State Rly. taken over on 1 April 1950 and Rs. 6 lakhs interest thereon.

(t) Represents interest on balance and dividend, etc., on investments in shares of and loans to Branch line companies.

(v) Includes 1·11 lakhs on account of interest and dividends, etc. on investments.

(w) Excludes Rs. 1,39 lakhs on account of *ad hoc* reduction of 15 percent in pre-partition balances on the basis of approximate capital-at-charge apportioned to Pakistan at the time of Partition.

(x) Includes Rs. 32 lakhs on account of balances in respect of Ex G.B.S. Ry. as on 1-8-1949 adopted during the year without financial adjustment.

(aa) Excludes refund to General Revenues of Rs. 33 lakhs of interest on ex-Scindia State Railway balance.

(ab) Excludes Rs. 61 lakhs of ex-Scindia State Railway drafted from State Railway balances.

Development Fund

(In lakhs of rupees)

Year	Appropriation to the Fund	Withdrawal from the Fund	Net accretion to the Fund during the year	Closing balance
1946-7	(*a*) 15,24	(*d*) 41	14,83	14,83
1947-8—				
1-4-47 to 14-8-47	(*b*) 18	(*e*) 34	—16	14,67
15-8-47 to 31-3-48	(*b*) 30	59	—29	14,38
1948-9	(*c*) 1,27	2,33	1,06	13,32
1949-50	(*b*) 43	—5	48	13,80
1950-1 @	10,52	5,35	5,17	(*f*) 19,44
1951-2	(*g*) 10,65	7,70	2,95	(*h*) 22,48
1952-3	(*i*) 12,76	8,10	4,66	27,14
1953-4	(*j*) 3,29	9,81	—6,52	20,62
1954-5	(*k*) 9,70	12,78	—3,08	17,54
1955-6	(*l*) 7,57	12,14	—4,57	12,97
1956-7	(*m*) 20,65	19,84(*n*)	+81	(*n*) 13,75
1957-8	(*o*) 13,63	25,53	—11,90	1,85
1958-9	18,89	27,87	—8,95	(aa) —1,69(*p*)
1959-60	(*q*) 34,47	24,89	9,58	8,91(*r*)
1960-1	35,09	23,32	11,77	19,13(*s*)
1961-62	24,71	21,14	3,57	10,49*
1962-63	42,76	23,17	19,59	29,68**
1963-64	50,78	29,94	20,84	52,23†

(*a*) This is made up of Rs. 12 crores transferred from Railway Reserve Fund, Rs. 3 crores from the Railway surplus for 1946-7 and Rs. 24 lakhs interest on balance.

(*aa*) Excludes Rs. 2,20 lakhs due to reduction in prepartition balances on 15-8-1947 and includes Rs. 7,61 lakhs due to transfer of the cost of Deesa-Gandhidham and Chunar-Robertsganj lines to Capital.

(*b*) Represents only interest on balance.

(*c*) This includes Rs. 43 lakhs on account of interest on balance.

(*d*) Includes Rs. 5 lakhs for B.A. & N.W. Railways.

(*e*) Includes Rs. 5 lakhs for B.A. & N.W. Railways.

(*f*) Includes Rs. 47 lakhs (Provisional) on account of Indian States' Railways taken over from 1-4-1950.

(*g*) Includes Rs. 65 lakhs on account of interest on balance.

(*h*) Includes Rs. 59 lakhs (Provisional) on account of the revision of the Indian States' Railways, balances taken over from 1-4-1950.

(*i*) Includes Rs. 76 lakhs on account of interest on balance.

(*j*) Includes Rs. 73 lakhs on account of interest on balance.

(*k*) Includes Rs. 60 lakhs on account of interest on balance.

(*l*) Includes Rs. 49 lakhs on account of interest on balance.

(*m*) Includes Rs. 43 lakhs on account of interest on balance.

(*n*) Excludes Rs. 2 lakhs on account of difference between *ad hoc* and revised balances on 15th August 1947 and Rs. 1 lakh interest thereon.

(*o*) Includes Rs. 25 lakhs on account of interest on balance.

(*p*) Includes Rs. 7,61 lakhs on account of outlay in respect of Chunar-Robertsganj Churk and Deesa-Gandhidham lines transferred without financial adjustment from Development Fund to capital during the year and excludes Rs. 2,20 lakhs on account of *ad hoc* reduction in the prepartition balances on 15-8-1957.

(*q*) Includes loan from Central Government amounting to Rs. 14,85 lakhs during 1959-60.

(*r*) Includes Rs. 1,02 lakhs being outlay (*i*) Adipur-Bhuj conversion (*ii*) providing a wagon repair shop at Kotah and (*iii*) remodelling of wagon shops at Mahaluxmi, W. Rly. written back during this year without financial adjustment.

(*s*) Includes Rs. 3,32 lakhs due to transfer of the cost of the new lines Utraitia-Sultanpur-Zafarabad, and Pathankot-Mahopur on Northern Railway to Capital, to the extent of their remunerativeness according to assessment made on the basis of actuals, Rs. 1 lakh due to transfer of expenditure on Howrah Car Shed to Capital and also covers Rs. 4,88 lakhs due to transfer from Capital and Depreciation Reserve Fund to Development Fund of the expenditure from 1-4-1955 to 31-3-1960 relating to quarters forming part of a scheme for class III and IV staff.

*Includes Rs. 16,81 lakhs due to *ad hoc* transfer of the cost of the new lines under construction on 1-4-1955, *viz.*, Khandwa-Hingoli on Central Railway and Quilon-Ernakulam on Southern Railway to Capital, as per the accepted recommendations of the Railway Convention Committee, 1960 Rs. 39 lakhs due to erroneous transfer to the cost of the Works Bhagalpur-Mandar Hill restoration to Capital on Eastern Railway and Rs. 9 lakhs relating to conversion of Adipur-Bhuj on Western Railway and excludes Rs. 29,41 lakhs loans repaid to General Revenue in terms of the accepted recommendations of the Railway Convention Committee, 1960, Rs. 9 lakhs on account of write back of erroneous adjustments relating to quarters for class III and Class IV staff forming part of a scheme to Capital and D.R.F.

** Includes 11 lakhs due to transfer to Capital of the cost of the new line Bobbili-Salur on South Eastern Railway as it has since been assessed to be remunerative and excludes 48 lakhs due to write back from Capital of the erroneous adjustments made in 1961-62 relating to the Works 'Restoration of Bhagalpur-Mandar Hill' on Eastern Railway and conversion of 'Adipur-Bhuj' on Western Railway, and also covers Rs. 3 lakhs due to write back of expenditure on the Works-providing Crossing Station at Kargada and doubling of the Section Godhra-Ratlam from Capital on Western Railway.

†Includes Rs. 2,50 lakhs due to transfer to Capital of the cost of certain works now assessed to be remunerative justifying their change to Capital Rs. 3 lakhs transferred to D.R.F. on Central Railway and excludes 82 lakhs transferred from Capital to O.L.W.R. on Western Railway.

@The figures from 1950-51 are provisional as the balances of the ex-States' Railways merged therein, have not yet been finalised.

Total investment of Indian Railways to end of each year from 1950-1—It would be evident from the foregoing paragraphs that the total investment on railway assets has been financed from loan capital or revenue, viz.

(*i*) Capital account (loan account) financed—

(*a*) by loans raised specifically for Railway purposes by Government (specific debt),

(*b*) by the utilization of revenue surpluses and other resources at the disposal of the Government of India (non-specific debt), and

(*c*) by contributions from the former Indian States and District Boards, etc., (Indian State and District Board Capital).

NOTE—As a result of Federal Financial Integration with effect from 1 April 1950, the capital contributed by the former Indian States has been merged in the capital-at-charge of Indian Railways for calculating dividend payable to general revenues under the revised convention of 1949.

(*ii*) Depreciation Reserve Fund (expenditure relating only to the betterment or improvement in the assets replaced).

(*iii*) Development Fund (as referred to in the earlier paragraphs),

(*iv*) Revenue—open line works and new minor works,

(*v*) Miscellaneous representing the value of assets which may have come to Railways without financial adjustment or from a source not covered by the above-mentioned items (*i*) to (*iv*).

The total amount of investment from all these sources on the Government Railways to end of each year is shown in the table below from 1950-1 since when the block account representing the physical assets of the Railway undertaking whether financed from loan (share) capital or revenue, is being kept separately in terms of the recommendations of the Convention Committee of 1949.

Total Investment on Indian Government Railways to end of each year

Year	Commercial Lines					Strategic Lines	Total investment whether financed from loan capital or Railway revenue (Cols. 6 & 7)
	Expenditure financed from						
	Capital invested (financed from the loan account)	Depreciation Reserve Fund on improvement of assets	Development Fund	Revenue—Open Line Works and new Minor Works	Total (Cols. 2 to 5)	Capital invested (financed from loan account)	
1	2	3	4	5	6	7	8
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.
1950-1 ..	8,25,58,10,097	6,41,37,022	8,34,79,171	13,43,61,809	8,53,77,88,099	1,45,34,440	8,55,23,22,539
1951-2 ..	8,46,77,28,162	12,98,59,994	15,34,37,837	16,84,97,644	8,91,95,23,637	3,33,82,953	8,95,29,06,590
1952-3 ..	8,53,56,55,360	13,75,50,498	23,12,71,016	21,10,22,109	9,11,54,98,983	3,81,26,932	9,15,36,25,915
1953-4 ..	8,65,48,12,147	23,24,24,880	32,15,63,868	25,31,23,123	9,46,19,24,018	3,81,82,079	9,50,01,06,097
1954-5 ..	8,97,54,25,228	30,83,18,124	44,27,94,609	30,03,78,808	10,02,69,16,769	4,04,18,322	10,06,73,35,091
1955-6 ..	9,64,88,11,560	41,01,65,144	56,38,55,006	35,74,30,396	10,98,02,62,106	4,09,46,641	11,02,12,08,747
1956-7 ..	10,67,43,03,484	48,62,82,842	75,58,90,012	43,17,57,154	12,34,82,33,492	4,28,00,449	12,39,10,33,941
1957-8 ..	12,18,73,88,508	58,34,62,726	1,00,45,44,788	52,95,41,259	14,30,49,37,281	3,69,62,838	14,34,19,00,119
1958-9 ..	13,52,70,69,043	71,91,93,721	1,19,98,34,696	63,20,85,267	16,07,81,82,728*	3,88,14,801	16,11,69,97,529
1959-60 ..	14,28,39,13,518	82,83,27,597	1,43,22,98,611	74,33,98,346	17,28,79,38,072	3,89,18,816	17,32,68,56,888
1960-61 ..	15,11,90,29,823	94,86,09,525	1,67,58,46,295	85,27,24,828	18,59,62,10,471	8,96,45,906	18,68,58,56,377
1961-62 ..	16,68,99,78,579	1,04,17,24,465	1,70,77,01,471	94,41,81,384	20,38,35,85,899**	13,98,11,100	20,52,33,96,999**
1962-63 ..	18,78,39,70,377	1,19,11,12,752	1,93,74,86,587	1,05,00,52,541	22,96,26,22,257**	18,41,77,345	23,14,67,99,602**
1963-64 ..	21,26,81,70,445	1,32,44,68,420	2,21,85,80,305	1,16,04,05,039	25,97,16,24,209**	32,82,43,535	26,29,98,67,744**

NOTE—As stated above the block account was introduced in the accounts for 1950-1 and it involved the determination of the element of improvement in respect of a very large number of replacement works financed from the Depreciation Reserve Fund, Development Fund and Revenue, spreading over a number of years. This entailed elaborate calculations, but in order to overtake arrears in the compilation of accounts, the figures for 1950-1 and 1951-2 were arrived at according to the best 'estimates' possible; the differences between these estimates and the figures arrived at on actual calculations having been adjusted in the figures for the year 1952-3, except in respect of certain regions of the Western Railway, which have been adjusted in the figures for 1954-5.

NOTE 2.—As the accounts for the period ending 14 August 1947, have not been closed for want of accounts of the late Bengal Assam and the North Western Railways from the Pakistan authorities, the figures in this statement and in statements of individual railways are provisional.

* Differer[illegible] of 1 is due to rounding off.

** The[illegible] not include the miscellaneous investment (*ie* on account of U. S. excess tools received free of charge out side the accounts), the figures fo[illegible]rs, 1961-62, 1962-63 and 1963-64, being Rs. 3,43,21,054, Rs. 3,94,55,763 and Rs- 4,17,49,925 respectively.

General—From the year 1906-7 Interest on Debt in India has been calculated at the actual average rate for the year of interest on the mean non-specific debt of India, instead of at the fixed rates of 4 and $3\frac{3}{4}$ per cent. previously employed. The actual rates from 1906-7 to 1918-9 were 3·437, 3·412, 3·384, 3·384, 3·377, 3·401, 3·500, 3·388, 3·499, 3·4725, 3·2964, 3·4730 and 3·4818 per cent. respectively. The rates for the years 1919-20 to 1963-64 were as follows :—

1919-20	3·4076	per cent.	for expenditure to end of 1916-17, and
	5·9328	,, ,,	for subsequent expenditure.
1920-1	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·1979	,, ,,	for subsequent expenditure.
1921-2	3·3252	,, ,,	for expenditure to end of 1916-7, and
	6·1038	,, ,,	for subsequent expenditure.
1922-3	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·4800	,, ,,	for subsequent expenditure.
1923-4	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·6900	,, ,,	for subsequent expenditure.
1924-5	3·3252	,, ,,	for expenditure to end of 1916-17, and
	5·5400	,, ,,	for subsequent expenditure.
1925-6	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·6600	,, ,,	for subsequent expenditure.
1926-7	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·4300	,, ,,	for subsequent expenditure.
1927-8	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·3800	,, ,,	for subsequent expenditure.
1928-9	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·6300	,, ,,	for subsequent expenditure.
1929-30	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·3100	,, ,,	for subsequent expenditure.
1930-1	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·7000	,, ,,	for subsequent expenditure.
1931-2	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·6500	,, ,,	for subsequent expenditure.
1932-3	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·5400	,, ,,	for subsequent expenditure.
1933-4	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·4300	,, ,,	for subsequent expenditure.
1934-5	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·2000	,, ,,	for subsequent expenditure.
1935-6	3·3252	,, ,,	for expenditure to end of 1916-7, and
	5·0500	,, ,,	for subsequent expenditure.
1936-7	3·3252	,, ,,	for expenditure to end of 1916-7, and
	4·8300	,, ,,	for subsequent expenditure.
1937-8	3·3252	,, ,,	for expenditure to end of 1916-7, and
	4·7600	,, ,,	for subsequent expenditure.
1938-9	3·3252	,, ,,	for expenditure to end of 1916-7, and
	4·7000	,, ,,	for subsequent expenditure.
1939-40	3·3252	,, ,,	for expenditure to end of 1916-7, and
	4·6000	,, ,,	for subsequent expenditure.
1940-1	3·3252	,, ,,	for expenditure to end of 1916-7, and
	4·4100	,, ,,	for subsequent expenditure.
1941-2	3·3252	,, ,,	for expenditure to end of 1916-7, and
	3·3400	,, ,,	for subsequent expenditure.
1942-3	3·3252	,, ,,	for expenditure to end of 1916-7, and
	4·0900	,, ,,	for subsequent expenditure.
1943-4	3·3252	,, ,,	for expenditure to end of 1916-7, and
	3·9200	,, ,,	for subsequent expenditure.
1944-5	3·3252	,, ,,	for expenditure to end of 1916-7, and
	3·6800	,, ,,	for subsequent expenditure.
1945-6	3·3252	,, ,,	for expenditure to end of 1916-7, and
	3·4900	,, ,,	for subsequent expenditure.
1946-7	3·3000	,, ,,	for entire expenditure.
1947-8	3·2500	,, ,,	for entire expenditure.
1948-9	3·2000	,, ,,	for entire expenditure.
1949-50	3·1800	,, ,,	for entire expenditure.
1950-1	3·1600	,, ,,	for entire expenditure.
1951-2	3·1200	,, ,,	for entire expenditure.
1952-3	3·1100	,, ,,	for entire expenditure.
1953-4	3·1400	,, ,,	for entire expenditure.
1954-5	3·1900	,, ,,	for entire expenditure.
1955-6	3·2500	,, ,,	for entire expenditure.
1956-7	3·2900	,, ,,	for entire expenditure
1957-8	3·3600	,, ,,	for entire expenditure.
1958-9	3·4500	,, ,,	for entire expenditure.
1959-60	3·5500	,, ,,	for entire expenditure.
1960-61	3·5700	,, ,,	for entire expenditure.
1961-62	3·5900	,, ,,	for entire expenditure.
1962-63	3·6600	,, ,,	for entire expenditure.
1963-64	3·7500	,, ,,	for entire expenditure.

One effect of the change is that, in some cases, while the capital outlay on a railway at the end of 1907 was more than that at the end of 1906, the interest charge in connection therewith was less.

The gain or loss to the State shown in the statistical tables showing Statistics of working of individual lines in this publication are administrative figures attributable to the year and differ from those appearing in the Railway Board's Report which are the net results of receipts and payments actually adjusted during the year.

(4) HISTORY OF THE ORGANISATION OF GOVERNMENT CONTROL OVER RAILWAYS

Initial Policy of Control through Consulting Engineers of Guaranteed Railway—The initial policy of the Government of India for the construction and working of railways was the establishment of guaranteed railway companies of English domicile. Control over the operations of these companies was at first secured through the appointment of a Consulting Engineer of Guaranteed Railways. Some years later Local Consulting Engineers were appointed for the exercise of control over guaranteed Railways and over State-owned Railways in the construction of which the State had been financially interested and which had been leased to companies for working. These officers combined the duties of supervision and control on behalf of the Government of India and of an Inspector under the Government of India Railway Act. The Government of India were not directly concerned with the ownership of railways until 1868 when the Calcutta and South Eastern Railway was surrendered to the Indian Government under the terms of the contract between the Secretary of State and the Company.

Establishment of State Railway Directorate—Owing to the Government of India having in 1869 definitely adopted the policy of direct construction and ownership of railways, a period of rapid development of railway construction ensued and it became necessary to relieve the Public Works Department Secretariat of the Government of India in some measure of the detailed control of railways. Accordingly in 1874 a State Railway Directorate was established and the greater portion of the State Railway establishment and business connected with State Railway Administration was transferred to the control of the Director of State Railways, an officer who functioned on much the same lines as the Head of Department under the Government of India. The Consulting Engineer to the Government of India for the State Railways was at the same time associated with him but all important matters had still to be referred to the Public Works Department. A Special Deputy Secretary in the Railway Branch of the Secretariat of the Public Works Department was also appointed to conduct the correspondence between the Government of India and these officers.

Appointment of territorial directorates—Early in 1877 a further change was made in the organization responsible for the administration and control of State Railways and in the place of one Director of State Railways three Directors of territorial systems and one Director of State Railways Stores were appointed. These territorial divisions comprised the following systems:—

Central	1,897 kilometres
Western	1,492 kilometres
North Eastern	1,336 kilometres

This division of the administration on a territorial basis proved unsatisfactory in practice as it resulted in the issue of conflicting orders as far as the management of open lines was concerned although no difficulty was experienced in the supervi[illegible]n of new construction.

[illegible]r General of Railways—As the number of lines under construction had decreased and in order to remedy the det[illegible]st mentioned, it was decided in 1880 to abolish the Directors of the Central and Western Systems and to transfer the work allotted to them to the Consulting Engineers of the neighbouring Guaranteed Railways. The abolition of these two appointments resulted in an increase in the administrative work of the Secretariat and it was found necessary to raise the status of the Deputy Secretary to whom the powers previously excercised by the Directors had been entrusted to that of Director General of Railways.

In the revised organization the Consulting Engineer to the Government of India for State Railways was associated with the Director General of Railways and assisted the latter primarily in an advisory capacity in matters of civil engineering while the Director of Stores similarly acted in matters concerning stores and rolling stock and at the same time was an adviser in matters affecting establishment. The Director of Traffic was appointed at the same time as an adviser on traffic problems and the accounts work of the department was placed under the Accountant General, Public Works Department.

Administrative Set-up in 1881—Government control and supervision of the Guaranteed Railways continued to be exercised by the Local Consulting Engineers to Government. There were five such officers at the time with headquarters at Bombay, Madras, Calcutta, Lahore and Lucknow. The Consulting Engineers at Madras and Bombay worked directly under the Government of these Presidencies, while those at Calcutta, Lahore and Lucknow were under the immediate orders of the Government of India. Under this arrangement practically all powers affecting the finances and day-to-day management of the railways were vested either in the Consulting Engineers or in the Government, both for the guaranteed railway companies and later on for State Railways which had been leased for working to railway companies.

The following is a list of the administrative appointments that existed in 1881;

(1) Member of the Governor General's Council, Public Works Department
(2) Secretary, Public Works Department
(3) Deputy Secretary, Railway Branch
(4) Under Secretary, Railway Branch
(5) Consulting Engineer of State Railways
(6) Director General of Railways
(7) Director of Construction
(8) Accountant General, Public Works Department
(9) Director of State Railways, Stores
(10) Three Assistants to the Director General of Railways
(11) Consulting Engineers for Guaranteed Railways at Calcutta, Lahore and Lucknow
(12) Deputy Consulting Engineers for Guaranteed lines, Calcutta, Lahore and Lucknow.

Madras and Bombay

(13) Joint Secretary, Railway Branch and Consulting Engineers for Railways
(14) Deputy Secretary, Public Works Department.

Punjab

(15) Secretary, Public Works Department.

Changes during 1881-1900—By this time also Local Governments and Administrations had been induced to take a practical interest in the management of railways and in a few cases short extensions had been constructed from funds the interest on which Local Governments had accepted responsibility to pay. Such lines were controlled by the Local Governments concerned under the general supervision of the Government of India.

After 1881 further alterations of a more or less detailed character were made in the administrative organization under the Director General of Railways, who was then assisted by a Director of Stores, a Director of Traffic and an Accountant General, Railways and by 1890, the following changes had taken place. Instead of a Deputy Secretary and Under Secretary, Railway Branch, there were then only an Under Secretary and an Assistant Secretary, Railways in the General Branch. The posts of Director of State Railways Stores, and Director of Construction had disappeared and in their place there was an Under Secretary, who was an *ex-officio* Deputy Director General of Railways. The post of Accountant General, Railways, had also been abolished and the Accountant General, Public Works Department, was once more made responsible for this work.

Further changes were made in 1897. In that year the post of Director General of Railways was abolished and the post of a Secretary to the Government of India in the Public Works Department was created in its place. The other administrative and secretariat appointments at the headquarters of the Government of India at the time were :—

(1) Director of Railway Construction, and Deputy Secretary and *ex-officio* Director of Stores
(2) Director of Railway Traffic, and Deputy Secretary and *ex-officio* Director of Railway Statistics
(3) Two Under Secretaries
(4) Two Assistant Secretaries
(5) One Mechanical Assistant.

The post of Consulting Engineer for State Railways was also abolished and his duties were transferred to the two Directors. The supervision of the accounts work of the Department, however, still remained under the Accountant General, Public Works Department, who was also an *ex-officio* Deputy Secretary to the Government of India.

Transfer of control from Public Works Department to Railway Board in the Department of Commerce and Industry—In October 1901, Sir Thomas Robertson, C.V.O., was appointed by His Majesty's Secretary of State for India in Council as Special Commissioner for Indian Railways to enquire into, and report on the administration and working of Indian Railways. In his report, which became available in 1903, Sir Thomas recommended that the administration of the railways in India should be entrusted to a small Board consisting of a President or Chief Commissioner who should have a thorough practical knowledge of railway working, and should be a Member of the Viceroy's Council for railway matters, and two other Commissioners who should be men of high railway standing and should have a similar training to that of the President. He recommended that the Board should, in addition to the necessary office establishment, be provided with—

(1) a Secretary who should have received a suitable training in the practical working of railways, and who should be *ex-officio* Secretary to the Government of India
(2) a Chief Inspector of Railways, to advise on all technical, engineering and mechanical questions
(3) a suitable number of Government Inspectors.

Sir Thomas Robertson's recommendations were carefully considered by the Governor General in Council and the Secretary of State, and early in 1905 it was decided that the Railway Branch of the Public Works Department of the Government of India should be abolished and that the control of the railway systems in India should be transferred to a Railway Board consisting of three persons, a Chairman and two Members. The Chairman of the Board was vested with the general control of all questions committed to the Railway Board with power to act on his own responsibility subject to confirmation by the Board. The Railway Board were authorised to delegate to the Chairman or a member the power of settling questions which might arise on any tour of inspection, such decision to be recorded subsequently as an act of the Railway Board. The Board was made subordinate and directly responsible to the Government of India in the Department of Commerce and Industry

The Railway Board assumed office in March 1905 and were provided with the following establishment :—

(1) Secretary
(2) Examiner of Accounts
(3) Under Secretary, Construction
(4) Under Secretary, Traffic
(5) Registrar
(6) Director of Railway Construction.

Certain changes were, however, made in the following year and the establishment then consisted of—

1 Secretary
3 Assistant Secretaries, one each for Establishment, Construction and Traffic
1 Registrar
1 Director of Railway Construction
1 Railway Accounts Officer.

Sir Thomas Robertson had further suggested in his detailed recommendations that extended powers, both administrative and financial, should be delegated to Boards of Directors of Companies, that the appointments of Consulting Engineers should be abolished and that the work which they perform under the Railways Act should be entrusted to a body of Government Inspectors to be appointed for the purpose. These recommendations were given effect to in a modified form in 1908.

Within a short time after the constitution of the Railway Board, it was found that work was being hampered by having the Commerce and Industry Department between the Railway Board and the Governor General in Council and in October 1908 on the recommendations of the Railway Finance Committee presided over by Sir James Mackay (later Lord Inchcape), the following changes were introduced—

(1) the appointment of the Chairman of the Railway Board was changed into that of President of the Railway Board and enhanced powers were vested in the President including *inter-alia* the power to over-rule his colleagues if he disagreed with them;

(2) the Board with its staff became collectively the Railway Department distinct from and independent of the Department of Commerce and Industry, though remaining under the administrative charge of the Hon'ble Member, Commerce and Industry Department, as the Railway Member;

(3) the President of the Board was given direct access to the Viceroy as if he were a Secretary to the Government of India.

Appointment of Accountant General of Railways—At the same time in consequence of the amalgamation of the Public Works Department Accounts and Civil Audit Establishments under the control of the Finance Member of the Government of India the appointment of Accountant General, Public Works Department, was abolished and the appointment of Accountant General, Railways was revived.

In 1909 the post of Director of Railway Construction was abolished and the appointment of Chief Engineer with the Railway Board for the purpose of advising the Railway Board on technical matters connected with Civil Engineering was created.

In January 1914, it was decided that the importance of financial and commercial considerations in connection with the control of Indian Railway policy justified a modification of the rule that the President and Members of the Railway Board should all be men of large experience in the actual working of railways. It was then decided that in future one member who equally with the others might be appointed President should be selected for commercial and financial experience and a member with the necessary qualifications was appointed.

This arrangement was, however, altered in 1920 when it was decided that all the three members of the Board should possess railway experience. To assist the Board, however, in the consideration of financial questions, the post of Financial Adviser to Railway Board was created.

Owing to the expansion of railways in India and the increased work thrown on the Board a second Assistant Secretary, Engineering, was appointed in 1914, and in 1916 the duties of the Construction Branch were divided between one branch dealing with Projects under an Assistant Secretary and a second branch dealing with Way and Works which was sometimes under a separate officer and at other times under the Secretary or Chief Engineer. In 1922 the charge of the Way and Works branch was divided between the Assistant Secretary in charge of Projects and the Assistant Secretary in charge of Stores.

In November 1922, the Board's establishment was strengthened by the appointment of a Chief Mechanical Engineer. This appointment was created to enable the Board to have at Headquarters a reliable adviser on matters connected with mechanical engineering.

Reorganisation of Railway Board 1921—24—During 1921 a Committee presided over by Sir William Acworth visited India and one of the questions referred to them was the evolution of a satisfactory authority for the administration of the varied functions which the Railway Board had to perform as:—

(*a*) the directly controlling authority of the three State-worked systems aggregating 14,529 kilometres,

(*b*) representative of the predominant owning partner in systems aggregating 36,933 kilometres,

(*c*) the guarantor of many of the smaller companies,

(*d*) the statutory authority over all railways in India.

The Acworth Committee recommended in their report—

(1) that a new Department of Communications responsible for railways, ports and inland navigation, road transport and posts and telegraphs under a Member of Council in charge of Communications should be created,

(2) that under the Member of Council for Communications there should be a technical staff consisting on the railway side of a Chief Commissioner and four Commissioners and that of the four, one should be in charge of finance and the organization and staff of the office and the other three Commissioners should be in charge of three respective divisions, Western, Eastern and Southern,

(3) that the technical staff attached to the Commission should be strengthened specially on the traffic side.

The Government of India, though they did not accept the first recommendation of the Acworth Committee, agreed to the reorganization of the Railway Board being undertaken on the principles underlying the report of the Acworth Committee. The appointment of a Chief Commissioner was accordingly sanctioned in November 1922, and in accordance with the recommendations of the Acworth Committee, he was solely responsible under the Government of India, for arriving at decisions on technical questions and advising the Government of India on matters of Railway policy.

Appointment of Financial Commissioner for Railways—The first duty of the Chief Commissioner was to work out detailed proposals for the re-organization of the Railway Board and as a first step he made recommendations to the Government of India for the immediate appointment of a Financial Commissioner. This recommendation was strongly endorsed by the Indian Retrenchment Committee and the appointment of the Financial Commissioner was made in April 1923 with the sanction of the Secretary of State. The further proposals of the Chief Commissioner for the reorganization of the Railway Board were accepted by the Government of India and the Secretary of State and were introduced from 1 April 1924. It was decided, however, for reasons connected with the statutory position of the Railway Board, and to avoid confusion with the provisions for a Railway Commission under Chapter V of the Railways Act, to retain the name "Railway Board" for the headquarters organization of the Railway Department instead of "Railway Commission" as recommended by the Acworth Committee.

The Railway Board as then reconstituted consisted of the Chief Commissioner as President, the Financial Commissioner and two Members, the Chief Commissioner being *ex-officio* Secretary to the Government of India in the Railway Department. The proposal of the Acworth Committee that the Indian Railway should be subdivided into three territorial divisions with a Commissioner in charge of each was not accepted, and the work of the Members of the Board was divided on the basis of subjects and not on a territorial basis. One Member dealt with technical subjects and the other with general administration, personnel and traffic subjects, the Financial Commissioner representing the Finance Department on the Board and dealing with financial questions.

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The reorganization carried out in 1924 had for one of its principal objects the relief of the Chief Commissioner and the Members from all but important work so as to enable them to devote their attention to larger questions of railway policy and to enable them to keep in touch with local Governments, railway administrations and public bodies by touring to a greater extent than they had been able to do in the past. This object was effected by placing a responsible Director at the head of each of the main branches of the Board's work, namely, Civil Engineering, Mechanical Engineering, Traffic and Establishment. The former Chief Engineer and the Chief Mechanical Engineer who had been employed mainly in consultative work, became Directors and together with the Directors of Traffic and Establishment were made responsible for the direct disposal of the work of their branches under the general orders of the Railway Board.

The posts of Joint Secretary and four Assistant Secretaries were replaced by six Deputy Directors working under the Directors and incharge of branches dealing with Establishment, Works, Projects, Stores, Statistics and Traffic. One Assistant Director was also added to supervise the Technical Branch and the Drawing Office. The disposal of the general work of the Railway Board was provided for by the continuance of the post of Secretary in whose name all letters and orders of the Board issued. The position of the Board as a Department of Government of India was maintained and it worked under the Member for Commerce and Railways. As already stated the Chief Commissioner was *ex-officio* Secretary to the Government of India in the Railway Department and orders issued by the Board over the signature of the Secretary were orders of the Government of India.

Experience of the working of this organization during 1924-5 and the decision agreed to by the Legislative Assembly in September 1924 to separate railway finances from the general finances of the country made it necessary to appoint a Deputy Director and an Assistant Director of Finance. An Assistant Director of Statistics was also added during that year. Later a Director of Finance was added to the establishment occupying as regards disposal of work, the same position as the Directors referred to above.

Further experience of the reduction of work resulting from the large delegation of powers and responsibility to the Agents of State-managed railways and the Board of Directors of Company managed railways enabled a rearrangement of work to be made during 1925-6 accompanied by a reduction in the staff. Under this rearrangement the posts of three Deputy Directors, an Assistant Director and the Assistant Secretary were held in abeyance. The personnel work was transferred from the Director of Establishment to the Secretary and a temporary post of Deputy Secretary was created. Further a separate technical office was established to take charge of the technical work of the engineering branches. The technical officer also acted as *ex-officio* Secretary to the permanent Standardization Committees which were appointed to deal progressively with all questions of standards of equipment.

This arrangement was found, however, to be inadequate. In addition to the general increase in work in the Railway Board's office consequent on the taking over of the East Indian, Great Indian Peninsula and Burma Railways under State control labour problems had assumed such importance and were so rapidly increasing in number and complexity that it was not possible to deal with them effectively without the appointment of additional staff. Accordingly it was decided to create an additional post of Member of the Railway Board to deal with staff and labour questions, leaving the Member in charge of Traffic who had hitherto been dealing with establishment matters, to devote his whole time to questions relating to the Transportation and Commercial aspects of Railway work.

It was also decided to revive the post of Deputy Director, Establishment, so as to free the Director of Establishment from this work, and thus enable him to give his time to the study of problems of railway labour. Of the two posts of Deputy Directors of Traffic and Statistics one was held in abeyance from 1925 and the two posts were later amalgamated.

Changes during Thirties—In October 1930 the compilation of statistical information which used previously to be done in the Board's office was entrusted to the Controller of Railway Accounts, and with the transfer of this work the post of Assistant Director of Statistics was also transferred from the Railway Board's Office to the Controller of Railway Accounts.

In 1931-2 in view of the decline in traffic earnings and in the number and magnitude of engineering works owing to financial stringency, the possibility of making temporary reductions in the organization of the Board was explored and as a result of this examination and with the approval of the Secretary of State for India the following superior posts were held in abeyance with effect from the dates noted below—

Member, Traffic	29 March 1932.
Member, Engineering	5 May 1932.
Director, Civil Engineering	4 December 1931.
Director, Mechanical Engineering	1 April 1932.
Deputy Secretary	1 March 1932.
Assistant Director of Finance	31 July 1931.

It was also decided, for so long as the post of Member, Traffic, was held in abeyance, to create an additional temporary post of Deputy Director, Traffic, with effect from 1 April 1932.

The reorganization was completed, in May 1932, and then the superior staff in the office of the Railway Board consisted of the Chief Commissioner, the Financial Commissioner, a Member, three Directors, six Deputy Directors and a Secretary.

Shortly after this, however, it was recognized that unless the work was to be seriously delayed, it would be impossible for the Chief Commissioner who had taken over the duties of the Member, Engineering, after that post had been held in abeyance, to devote the time that was necessary for the disposal of Civil Engineering business in the Railway Board's office and it was accordingly decided to revive the post of Director of Civil Engineering, which was being held in abeyance since December 1931, with effect from November 1932, from which date the post of Deputy Director, Civil Engineering, was held in abeyance. It was also decided in October 1932 to convert the post of Chief Superintendent to that of Assistant Secretary. The post of Director, Mechanical Engineering, was revived with effect from 1 April 1935. As the Government of India had for sometime felt the need for a whole-time Member of the Railway Board devoting himself entirely to traffic questions, such as competition with

alternative means of transport, alterations in fares in order to improve net earnings, etc., the post of Member, Traffic, which was held in abeyance from 29 March 1932 was revived with effect from 12 October 1936 but owing to increase of work in the Traffic Branch it was decided not to abolish the post of Deputy Director, Traffic. An additional post of Deputy Director, Establishment was created temporarily from 17 October 1935, in order to deal with the increase in work consequent on the operation of the Government of India's orders regarding the representation of Muslims and other minority communities in Railway services. This post was continued up to the 15 April 1939. To cope with the increase of work in the Finance Branch an additional post of Assistant Director, Finance, was also created temporarily from 26 October 1936.

The superior staff in 1938-9 in the Railway Board's office consisted of the Chief Commissioner, the Financial Commissioner, two Members, five Directors, six Deputy Directors, a Secretary, an Assistant Secretary and an Assistant Director, Finance.

After the outbreak of the Second World War in 1939 and the taking over of the principal Railways previously being worked by the Companies, between 1942 and 1944, there have been a number of changes in the strength of the different Directorates in order to meet the exigencies of War and the new developments that resulted from Partition, Independence, integration of Indian States, regrouping of Railways, and expansion of development programmes. The Railway Board was strengthened by reviving the post of Member, Engineering, and also by creating certain additional posts of Directors.

Changes after Partition—On 31 March 1947, that is just before the Partition of India into the Dominions of India and Pakistan, the superior staff in the Railway Board's Office consisted of the Chief Commissioner, the Financial Commissioner, three Members, nine Directors, seven Joint Directors, seventeen Deputy Directors, five Assistant Directors, a Secretary, a Deputy Secretary, an Assistant Secretary and a Complaints Officer.

After Partition and the attainment of Independence with effect from 15 August 1947, and the introduction of the Cabinet system of the Government, the Board came under the administrative charge of the Hon'ble Minister for Transport and Railways assisted by a Minister of State for Railways from 1948 to 1952, and a Deputy Minister for Transport and Railways since 1952.

NOTE—With effect from 18 April 1957, the Minister for Railways has been in charge of the Railway Ministry only and is assisted by a Deputy Minister. However, after about a year i.e. in April 1958, another Deputy Minister was also appointed to assist him.

On 31 March 1948, the Board consisted of the Chief Commissioner, the Financial Commissioner and three Members assisted by seven Directors, eight Joint Directors, nine Deputy Directors, five Assistant Directors, a Secretary, a Deputy Secretary, an Assistant Secretary and a Complaints Officer. The Economic Adviser to the Railway Board was appointed in September 1948.

Reconstitution of Railway Board in 1951—With effect from 1 April 1951, the Railway Board was reconstituted and the post of Chief Commissioner was held in abeyance. The Board was left with three functional Members, one each in charge of Engineering, Staff and Transportation respectively, and the Financial Commissioner. The post of the Secretary, Railway Board, was down-graded to that of the Deputy Director's level. The new Secretary was relieved of all the Establishment work and the Administrative work of the officers including those in the Board's Office, which under the new arrangements was transferred to the Establishment Directorate. The Secretary to the Railway Board was put in charge of the administrative work of the Railway Board's Office only and the secretariat work of the Board itself. The Secretary, Ministry of Transport continued to be an *ex-officio* Member of the Board. One of the functional Members was appointed to act as the Chairman of the Board and *ex-officio* Secretary to the Government of India in the Ministry of Railways. The Chairman was made responsible for intra-Board Co-ordination. The Financial Commissioner for Railways functioned as an *ex-officio* Secretary to the Government of India in the Ministry of Railways in financial matters.

The Railway Board functioned as a corporate body, and as such was responsible to advise and submit to the Minister major questions of Railway policy with their recommendations. Other questions were submitted to the Minister for his information or orders by individual Members. Each of the functional Members was responsible for dealing with all technical aspects of the subject or subjects of which he was in charge and when a question impinged on the functions of another Member the latter's concurrence was necessary before orders issued. All policy matters were, however, submitted to the Board.

Each Member was responsible for giving necessary technical guidance to the Railway Administrations, either through the General Managers or the Heads of various technical departments of Railways, depending upon the importance of the directions or their character.

Similarly, in the revised set-up, the Directors, being the heads of their respective branches, were responsible for liaison work with the Railway Administrations, the general public and the other Ministries of the Government of India within their sphere.

Reconstitution of Railway Board in 1954—With effect from 1st October 1954, the Board was reconstituted with the addition of another Member. Also the Chairman, who continued to be *ex-officio* Secretary to the Government of India in the Ministry of Railways, was vested with all the functions and powers of the former Chief Commissioner of Railways. As a result of this, the Chairman, who is responsible for intra-Board Co-ordination, is solely responsible under the Minister for Railways, for arriving at decisions on technical questions and advising the Government on matters of Railway policy. All policy and other important matters are put up to the Minister through him. He has the power to over-rule the other Members of the Board, except that if, in any matter of Finance, the Financial Commissioner does not agree with the Chairman, he has the right to ask for it to be referred to the Railway Minister and the Finance Minister.

Since 18th August 1958, the Chairman, Railway Board, has been given the status of a Principal Secretary to the Government of India and Financial Commissioner and other Members of the Board function as *ex-officio* Secretaries to the Government of India in their respective spheres.

The Financial Commissioner for Railways is vested with the full powers of the Government of India to sanction railway expenditure being *ex-officio* Secretary to the Government of India in the Ministry of Railways in financial matters. The chairman and other three Members are in charge of Civil Engineering, Mechanical Engineering, Staff and Transportation, and each Member was responsible for dealing with all aspects of the technical subject or subjects under his charge. Where a question impinges on the function of another Member, his concurrence is required before orders issue. The post of Secretary, Railway Board, in the Senior Administrative Grade, was revived with effect from 16 January 1956.

Changes in 1956 and thereafter—In order to be able to tackle effectively the additional duties and responsibilities arising out of the planning and execution of works during the Second Five Year Plan, five Additional Members of the rank and status of General Managers of Railways were appointed with effect from 25 June, 1956, in charge of—

Major Civil Engineering Works;

Re-modelling and expansion of Mechanical Workshops and Production Units;

Commercial matters;

Accounts, with particular emphasis on expenditure in respect of works in the Five Year Plans, and

Recruitment and training of staff.

These Additional Members have the full authority of the Members of the Board in the subjects allotted to them, to issue directions to Railways and ordinarily to deal with the Minister direct. They also attend Board meetings when necessary.

ATTACHED OFFICE

(*i*) *Research, Designs and Standards Organisation—Formation of the Central Standard Office for Railways*—For the conduct of the work connected with the production of standards designs and specifications for all classes of materials, plant and rolling-stock in use on Indian Railways, the Central Standard Office for Railways was formed in January 1930 for a period of five years as an experimental measure, the post of Technical Officer with the Railway Board being abolished at the same time. The activities of this office towards the introduction of standard designs for railways on an all-India basis having proved successful, it was made permanent in 1935 with an addition to the existing staff, to carry out more extensive technical research to enable Indian Railways to keep abreast of modern development in Railway practice. The co-ordination of the work of the various Railways Standards Committees was also undertaken by that office. The work relating to inspection of locomotive boilers manufactured by the Tata Engineering and Locomotive Company, Limited was also conducted by that office. In fact, that office took over practically all the functions of foreign Consulting Engineers employed by Railways as Specialists for designs etc., in the various branches of Railway Engineering. The Central Standards office also has an Architectural Wing dealing with all major architectural problems of Indian Railways.

Railway Testing and Research Centre—The Railway Testing and Research Centre headquartered at Lucknow since September 1952, deals with investigation of problems of Research pertaining to Civil, Mechanical and Electrical Engineering, Research on concrete and building, and research and tests on bridges, structures, and track are also carried out by this organisation. A sub-centre at Chittaranjan deals with problems of Metallurgical and Chemical Research. The main centre also provides an information service which publishes bulletins and summaries of important research conducted in India and abroad and publishes the Indian Railway Technical Bulletin and other Railway technical papers.

NOTE—The Central Standards office for Railways and the Railway Testing and Research Centre were merged in March 1957 to form the Research, Designs and Standardisation Organisation. It was functioning under the charge of three officers of the rank of Directors as indicated below:—

Railway Testing and Research Centre—Director, Research.

Civil Engineering, Tele-Communications and Architectural Wings of Central Standards Office—Director, Standardisation (Civil).

Locomotive, Carriage and Wagon Wings of Central Standards Office—Director, Standardisation (Mechanical).

The whole Organisation is now in the charge of a Director General, Research, Designs and Standards Organisation with effect from 27 April, 1959.

Bridges and Floods Directorate of R.D.S.O.—A Bridges and Floods Directorate was formed in March, 1960 as a part of the Research, Designs and Standards Organisation, as a result of the recommendations of the High Level Committee of Engineers (Khosla Committee). This Directorate is under the charge of a Director. The functions of this Directorate are:—

(*a*) to collect and analyse all data received from the Bridge Reviewing Cells already functioning on each Railway;

(*b*) to arrange observation of discharges at selected railway bridges and hourly gauge record at these bridges during floods; and

(*c*) to provide basic material for the design of railway bridges in the various regions of the country on the basis of data collected and analysed in this Directorate and in the wings set up in the Central Water and Power Commission, Indian Meteorological Department and the Roads Wing of the Ministry of Transport.

(*ii*) *Railway Liaison Office*—This organisation is intended for maintaining liaison with the work done in the Directorate General of Supplies and Disposals in respect of indents placed by Railways for stores.

SUBORDINATE OFFICES

(*i*) *Railway Rates Tribunal*—A Railway Rates Tribunal with mandatory powers, was set up under the Indian Railway (Second Amendment) Act, 1948. It has been further reconstituted under the Indian Railways (Amendment) Act, 1957 (53 of 1957), and is functioning at Madras. Any complaint against Railway Administrations for showing undue or unreasonable preference in favour of any particular person or any particular description of traffic in any respect whatsoever or for quotation of unreasonable rates or for levy of any other unreasonable charge, may be made to the Tribunal who will hear and decide complaints in accordance with relevant provisions of Chapter V of Indian Railways Act, 1890. The Tribunal, however, has no jurisdiction in respect of (*a*) increase or reduction in the level of class rates and other charges, (*b*) classification or reclassification of any commodity, (*c*) fixation of wharfage and demurrage charges, and (*d*) scales of charges levied by a Railway Administration for the carriage of passengers and their luggage, parcels, military traffic and traffic in Railway materials and stores. The Central Government may, however, make a reference to the Tribunal for enquiry and report in respect of items (*b*) and (*d*) above.

In addition, the Tribunal has been given work in connection with exercise of revisionary powers of General Managers in regard to cases of dismissal, removal or compulsory retirement from service of class III employees (including skilled artisans

(*ii*) *Railway Service Commissions*—The four Railway Service Commissions headquartered at Allahabad, Bombay, Calcutta and Madras conduct selections for recruitment of Class III staff for the various units as given below:—

Allahabad Commission ..	.. For the Northern and the North Eastern Railways and the Diesel Locomotive Works.
Bombay Commission ..	.. For the Western and the Central Railways excluding the Secunderabad Division of the Central Railway.
Calcutta Commission ..	.. For the Eastern Railway, the South Eastern Railway, the Railway Electrification and the Chittaranjan Locomotive Works.
Madras Commission ..	.. For the Southern Railway, the Integral Coach Factory and the Secunderabad Division of the Central Railway.

(*iii*) *Railway Staff College, Baroda*—The Railway Staff College was established in 1952, for imparting training to Railway Officers. It conducts courses for Probationary Officers recruited to the various departments through the competitive examinations held by the Union Public Service Commission, officers recruited as District Medical Officers in the senior scale, Class II officers promoted from Class III and refresher courses for senior scale officers of all departments. In addition the college also arranges periodically special lectures on selected subjects by lecturers who have specialised in their line, for the benefit of Railway Officers.

(*iv*) *Indian Railways School of Permanent Way Engineering, Poona*—In compliance with a long-standing request from the United Nations Economic Commission for Asia and the Far East for setting up a Central Advanced Permanent Way Training Centre in India in which senior officers and inspectors from the member countries might be sent for training, the Advanced Permanent Way Training School, Poona was established in 1959 (to impart initial as well as refresher training in Advance Permanent Way to officers and senior subordinates of the Indian Railways and the officers from the countries falling within the E.C.A.F.E. Region). The School can accommodate 20 trainees at a time and the duration of courses ranges from two to three months. Initial as well as refresher training is imparted to Railway staff belonging to India and other countries falling within the E.C.A.F.E. region.

(*v*) *Indian Railways School of Signal Engineering and Telecommunications, Secunderabad*—The Indian Railways School of Signal Engineering and Telecommunications at Secunderabad started functioning on 1 November 1957 for imparting intensive and organised training, both initial and refresher, to certain class III staff of the Signal and Telecommunication Engineering Department. The courses for Class III staff as fixed by the Principal in consultation with Railway Administrations

In March, 1959, it was decided that Assistant Signal and Telecommunication Engineers and District Signal and Telecommunication Engineers should undergo a refresher course at the school for a period of 2 weeks but this period has since been increased to 2 months. The Board also decided in November, 1959 that probationer Assistant Signal and Telecommunication Engineers should also receive training at this School for a period of 3 months

The School caters to the needs of officers and staff of all Railway Administrations and because of the rapid developments in the field of signalling and telecommunication, the School has been brought under the direct control of the Board and placed on a permanent footing.

CHAPTER II

CENTRAL RAILWAY SYSTEM

HEADQUARTERS—Bombay, V. T.

PRESENT SYSTEM—The Central Railway was formed on 5th November 1951 by regrouping the following Railways into a single unified system:—

(a) The Great Indian Peninsula Railway system which comprised:—

(i) Great Indian Peninsula Railway (broad gauge—1·676 metres).

(ii) Bhopal Itarsi Railway (broad gauge—1·676 metres).

(iii) Bhopal Ujjain Railway (broad gauge—1·676 metres).

(iv) Bina Guna Baran Railway (broad gauge—1·676 metres).

(v) Dhond Baramati Railway (narrow gauge—0·762 metre).

(vi) Ellichpur Yeotmal Railway (narrow gauge—0·762 metre).

(vii) Pachora Jamner Railway (narrow gauge—0·762 metre).

(viii) Pulgaon Arvi Railway (narrow gauge—0·762 metre).

(ix) Matheran Hill Railway (narrow gauge—0·610 metre).

(b) The Nizam's State Railway system which comprised:

(i) The Nizam's State Railway (broad gauge—1·676 metres).

(ii) Bezwada Extension Railway (broad gauge—1·676 metres).

(iii) The Nizam's State Railway (metre gauge—1·000 metre).

(iv) Dronachallam (Dhone Kurnool) Railway (metre gauge—1·000 metre).

(c) Dholpur State Railway (narrow gauge—0·762 metre).

(d) Scindia State Railway (narrow gauge—0·610 metre).

The Barsi Light Railway owned and worked by the Barsi Light Railway Company Limited, incorporated in England after its purchase by the Government of India on 1st January 1954, was also merged with the Central Railway.

Administrative set up—The Central Railway Administration is headed by the General Manager who is assisted by the Senior Deputy General Manager and other Heads of Departments, viz., Chief Commercial Superintendent, Chief Electrical Engineer, Chief Engineer, Chief Engineer (Construction), Chief Mechanical Engineer, Chief Medical Officer, Chief Operating Superintendent, Chief Personnel Officer, Chief Security Officer, Chief Signalling and Tele-communication Engineer, Controller of Stores and the Financial Adviser and Chief Accounts Officer. There are seven Divisional Offices at Bhusaval, Bombay, Jhansi, Jabalpur, Nagpur, Secunderabad and Sholapur, each under a Divisional Superintendent who is, in effect, an area General Manager.

HISTORY

(a) *The Great Indian Peninsula Railway*—The Great Indian Peninsula Railway, one of the six trunk line guaranteed railways formed at the commencement of railway development in India, was the first to open a railway in the country for public traffic. In 1843, Mr. C. T. Clerk, a Railway Engineer, who had been employed on the Great Western Railway in England, came out to Bombay, in order to study on the spot the facilities for railway construction from that port to the districts above and beyond the line of Western Ghats. In the following year, a Committee for a railway company, having for its object, in the first instance, the construction of a line of railway from the port to the foot of the Ghats was organised in Bombay; but the scope of the scheme was soon enlarged to embrace more extended aims to be connoted by the name of "The Great Eastern Railway". Mr. Clerk originally advocated the construction of a line branching off into two lines at Kalyan, one over the line of the Western Ghats to the north-east by the Thull Ghat towards Khandesh, and the other across the Western Ghats to the south-east by the Bhore Ghat, in the direction of Poona and Madras. This scheme, though enthusiastically supported by both the Government and the Chamber of Commerce, failed to receive the approval of a Committee of Military Officers appointed to report on it by the then Government of India.

In the meantime, Mr. J. Chapman sponsored a project for a Great Indian Peninsula Railway, which was to extend a trunk line due east from Bombay up the Ghats and right across the Peninsula to a harbour at the mouth of the Godavari River on the opposite coast with branches later diverging, one north-east to Allahabad on the Ganges and another south-east to Madras. From these lines other branches were to ramify all over India. By 1845, the Great Indian Peninsula project, although still adhering to its ambitious name, came to restrict its scope to a system designed only to connect the principal producing districts situated at a reasonable distance beyond the Ghats with Bombay. In that year, a line was surveyed from Bombay to Kalyan, and up the Sahyadri Range by the Malay Ghat from the top of which it was to branch northward and southward. In 1849, the Great Indian Peninsula Railway Company entered into a contract with the Honourable East India Company for the construction of an experimental line 56 kilometres long, calculated to cost £500,000, to form part of a trunk line connecting Bombay with Khandesh and Berar and generally with the other Presidencies of India*. The terms involving Government guarantee on which the Company should operate were decided upon on 17 August 1849, when a legal agreement was signed with the Great Indian Peninsula Railway Company. The contract with the Great Indian Peninsula Railway Company was to run for 99 years, with provisions enabling the Government to purchase it at the end of 25 or 50 years. Meanwhile interest at 5 per cent on the capital of the Company was guaranteed until acquisition by State.

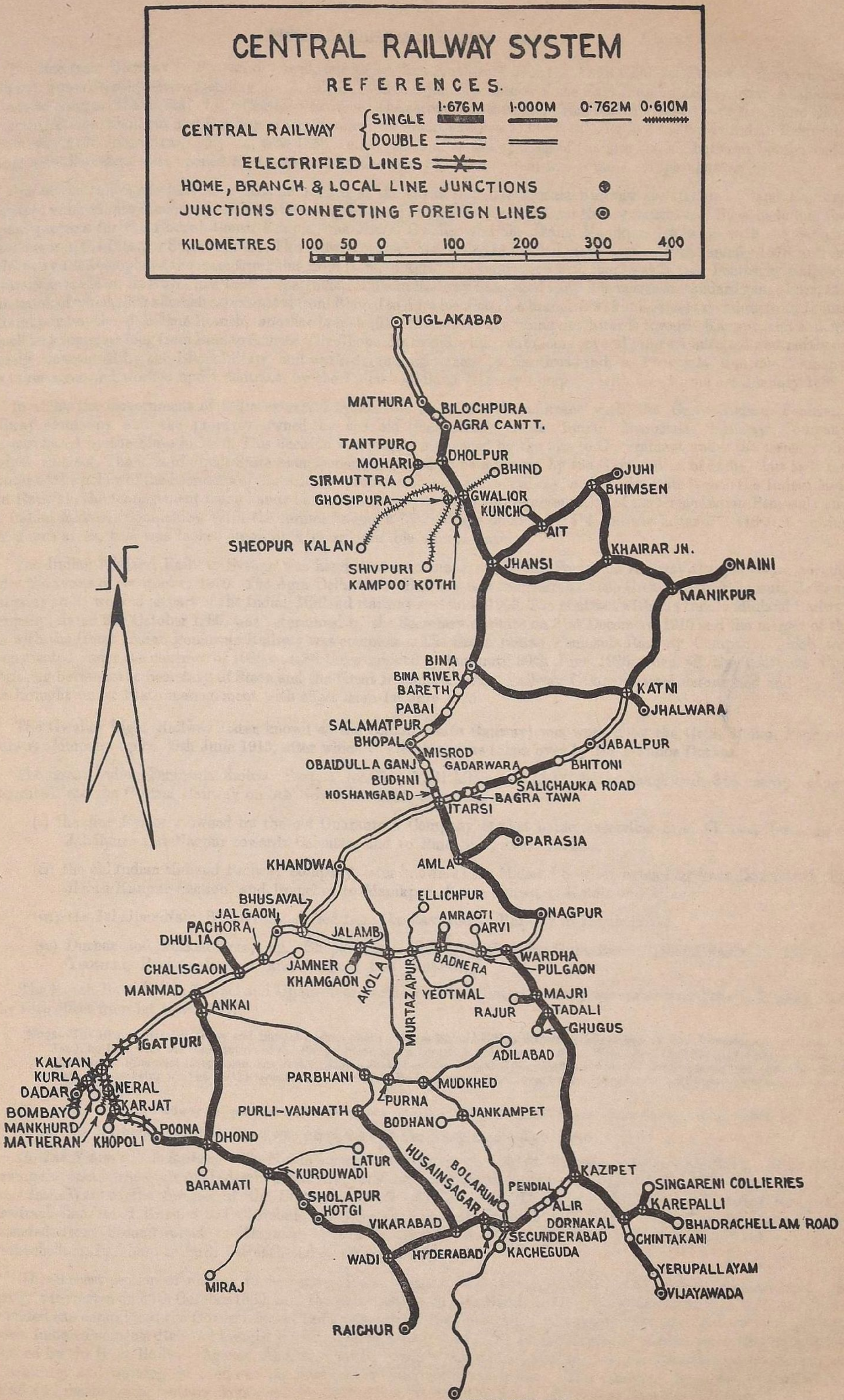
The Surveys, for the first section of the line, namely from Bombay to Thana, were commenced early in 1850. The plans were finished and tenders invited by September. The works begun early in 1851 were finished early in 1853. The first passenger train that ever ran in India was on this section on 16 April 1853†.

It was not, however, until the end of the year 1854 that all objections to the Bhore Ghat route were withdrawn and until the following year that the Thull Ghat proposals were agreed to. The approval of the Honourable Court of Directors of the East India Company was not accorded until 31 January, 1856.

The ultimate main line routes followed by the Great Indian Peninsula Railway may be briefly indicated.

* General Report on the Administration of the Several Presidencies and Provinces of British India during the year 1855-6, Part I, p. 22.

† Ibid p. 23.


CENTRAL RAILWAY SYSTEM
REFERENCES.
CENTRAL RAILWAY
SINGLE
DOUBLE
1·676M
1·000M
0·762M
0·610M
ELECTRIFIED LINES
HOME, BRANCH & LOCAL LINE JUNCTIONS
JUNCTIONS CONNECTING FOREIGN LINES
KILOMETRES 100 50 0 100 200 300 400
N
TUGLAKABAD
MATHURA
BILOCHPURA
AGRA CANTT.
TANTPUR
MOHARI
DHOLPUR
SIRMUTTRA
BHIND
JUHI
BHIMSEN
GHOSIPURA
GWALIOR
KUNCH
AIT
SHEOPUR KALAN
KHAIRAR JN.
SHIVPURI
JHANSI
KAMPOO KOTHI
NAINI
MANIKPUR
BINA
BINA RIVER
BARETH
KATNI
PABAI
JHALWARA
SALAMATPUR
BHOPAL
JABALPUR
MISROD
OBAIDULLA GANJ
GADARWARA
BHITONI
BUDHNI
SALICHAUKA ROAD
HOSHANGABAD
BAGRA TAWA
ITARSI
PARASIA
KHANDWA
AMLA
ELLICHPUR
BHUSAVAL
NAGPUR
JALGAON
AMRAOTI
PACHORA
JALAMB
ARVI
DHULIA
JAMNER
BADNERA
WARDHA
KHAMGAON
PULGAON
CHALISGAON
AKOLA
MURTAZAPUR
MANMAD
YEOTMAL
MAJRI
ANKAI
RAJUR
TADALI
GHUGUS
IGATPURI
ADILABAD
KALYAN
KURLA
DADAR
NERAL
PARBHANI
MUDKHED
BOMBAY
KARJAT
PURNA
MANKHURD
PURLI-VAIJNATH
JANKAMPET
MATHERAN
KHOPOLI
BODHAN
POONA
DHOND
LATUR
HUSAINSAGAR
BOLARUM
KURDUWADI
BARAMATI
KAZIPET
SINGARENI COLLIERIES
PENDIAL
SHOLAPUR
KAREPALLI
HOTGI
ALIR
VIKARABAD
DORNAKAL
BHADRACHELLAM ROAD
SECUNDERABAD
CHINTAKANI
HYDERABAD
KACHEGUDA
WADI
YERUPALLAYAM
MIRAJ
VIJAYAWADA
RAICHUR
DRONACHELLAM

CENTRAL RAILWAY SYSTEM—contd.

The line from Bombay to Kalyan diverged, one proceeding north-east over the Thull Ghat to Bhusaval, from whence again two lines diverted—one extending to Jabalpur, where it joined a branch of the East Indian Railway from Allahabad and one to Nagpur, the capital of the Central Provinces. The second line diverging from Kalyan passed over the Bhore Ghat connecting Poona, Sholapur and Raichur, where it joined the Madras Railway. The total length of the Great Indian Peninsula System was 2,073 kilometres. By the year 1863, i.e., 10 years after the opening of the first section between Bombay and Thana, 888 kilometres were opened for traffic and by the year 1870 the system was complete approximately.

One of the railways which later became merged in the Great Indian Peninsula Railway, the Indian Midland Railway Company, entered into a contract with the Secretary of State on 2nd October 1885, for the construction of lines, including the original projects for the Bhopal Jhansi Kanpur, the Jhansi Gwalior and the Jhansi Manikpur Railways with the Section Bina-Saugor of the Bilaspur State Railway. This railway opened its first line from Dholpur to Agra on 10th January 1878, and on 1st January 1889 completed the main trunk line from Itarsi to Agra. The connection with the Great Indian Peninsula Railway at Itarsi was made on 1st November 1884. The Indian Midland Railway comprised 1,090 kilometres of standard gauge lines, the main trunk of which (505 kilometres) extended from Bhopal to Agra *via* Jhansi, a branch (290 kilometres) extending from Jhansi to Manikpur on the Jabalpur Branch, another branch (217 kilometres) extending northwards towards Kanpur; and a short branch 74 kilometres long from Bina to Saugor. The Bhopal Itarsi State line, embracing several projects initiated and partly or entirely constructed by the Bhopal State, and worked under agreement by the Great Indian Peninsula Railway Company was taken over and worked under contract by the Indian Midland Railway Company with effect from 1st January 1889.

In 1899, the Government of India exercised option to determine the contract with the Great Indian Peninsula Railway Company and the property owned by the old guaranteed Great Indian Peninsula Railway Company was purchased by the State in 1900. This decision was largely influenced by the loss to Government under the terms of the original contract. The idea of direct State management appeared to be favoured by the Government of India, but as it ran counter to the policy of the Secretary of State, it was proposed to acquire the railway, and amalgamate it with the Indian Midland Railway, the management being handed over to a reconstituted Board representative of the Great Indian Peninsula and the Indian Midland Companies. With the former having a kilometrage of about 2,414 and the latter of 1,448 and serving contiguous areas, this was looked upon as a most desirable amalgamation.

The Indian Midland Railway System was handed over to the Great Indian Peninsula Railway Company for working under the terms of contract of 1900. The Agra Delhi Chord Railway was transferred to the Great Indian Peninsula Railway Company to be worked as part of the Indian Midland Railway system in 1909. The contract with the Indian Midland Railway Company, dated 2nd October 1885, was determined by the Secretary of State on 31st December 1910 and the merger of the line with the Great Indian Peninsula Railway was completed. The Great Indian Peninsula Railway Company, which was reconstituted under the contract of 1900 worked the combined system until 30th June 1925, when all the contracts then subsisting between the Secretary of State and the Great Indian Peninsula Railway Company were determined and the line was brought under State management with effect from 1st July 1925.

The Gwalior Light Railway (later known as the Scindia State Railway) was worked by the Great Indian Peninsula Railway Company up to 30th June 1913, after which the working was taken over by the Gwalior Durbar.

The Great Indian Peninsula Railway System, totalling 5,821 kilometres (5,477 broad gauge and 344 narrow gauge) integrated into the Central Railway on 5th November 1951, thus comprised—

(*i*) the line formerly owned by the old Guaranteed Company of that name, extending from Victoria Terminus to Jabalpur and Nagpur towards Calcutta, and to Raichur towards Madras;

(*ii*) the old Indian Midland Railway Company, later known as the Midland Section, extending from Bhopal to Delhi, Jhansi-Kanpur Section, and branches to Manikpur, Katni-Murwara, Kotah and Ujjain;

(*iii*) the Jabalpur-Naini Section transferred from the East Indian Railway in March 1925;

(*iv*) Durbar and worked lines, e.g., Bhopal-Itarsi, Bhopal-Ujjain, Bina-Guna-Baran, Dhond Baramati, Ellichpur-Yeotmal, Pachora-Jamner and Pulgaon-Arvi Sections.

The Kotah-Bina, Ujjain-Bhopal and Ujjain-Agar Sections of the Central Railway were transferred to the Western Railway with effect from 1st March 1957.

NOTE—The Bhopal-Itarsi Railway and Bhopal-Parbati Section of the Bhopal-Ujjain Railway came to vest in the Government of India on 1st June 1949 with the constitution of the Bhopal State into a Centrally Administered Area. With effect from 1st April 1950, as a result of the Federal Financial Integration, the Parbati-Ujjain Section of the Bhopal-Ujjain Railway and the Bina-Guna-Baran Railway which were already being worked by the Great Indian Peninsula Railway, were taken over by the Government and became an integral part of that railway system.

The Dhond-Baramati Railway was purchased by the State on 1st October 1944 and the Pachora-Jamner Railway on 1st April 1949.

(*v*) The Matheran Light Railway was purchased by the State on 1st April 1948.

(*b*) *The Nizam's State Railway*—The Nizam's State Railway System, 2,351 kilometres in length (1,107 B.G. and 1,244 M.G.) serving the area of the State of Hyderabad, and integrated into the Central Railway on 5th November 1951, included the sections from Wadi to the frontier of the State northward of Vijayawada, Dornakal to the Singareni Collieries, Karepalli to Bhadrachellam Road, Kazipet to Balharshah, and Vikarabad to Purli Vaijnath on the broad gauge. The metre gauge section extended from Secunderabad to Manmad, Purna to Hingoli, Secunderabad to the boundaries of the State north of Dronachellam, Parbhani to Purli Vaijnath and Mudkhed to Adilabad.

The earliest section of railway to be surveyed and constructed in the State was the Wadi-Secunderabad line. The survey was started on 30th October 1869, and the construction on 25th March 1871. The Government of H.E.H. the Nizam provided the capital and the Government of India constructed the line. Up to the end of 1878, the line was worked by the Great Indian Peninsula Railway Company with its own rolling-stock. From January 1879 to 31st December 1884, it was worked by the State Railway Agency. At this time the Nizam's Guaranteed Railway Company was formed for the purpose of acquiring and working the then existing lines and of constructing other lines. This Company continued to work all the broad and metre gauge sections from January 1885 to 31st March 1930, when all the agreements between H.E.H. the Nizam's Government and the Company were determined and on 1st April 1930, the railways were brought under the management of the Hyderabad State.

CENTRAL RAILWAY SYSTEM—*contd.*

As a result of the Federal Financial Integration with effect from 1st April 1950, the Nizam's State Railway came to vest in the Central Government. The Vijayawada Extension (B.G.—34·67 kilometres) and Dronachellam (Dhone-Kurnool—M.G. 58·39 kilometres) sections belonging to the Government of India and worked by the Nizam's State Railway, also then became integral parts of the main lines proper.

(c) *The Dholpur State Railway*—The Dholpur State Railway (narrow gauge—0·762 metre), about 89 kilometres in length—integrated into the Central Railway on 5th November 1951, was sanctioned for construction at the cost of His Highness the Maharaj Rana of Dholpur under Railway Board's Notification No. 267, dated 14th December 1905 and was maintained and worked by the Government of Rajasthan up to 31st March 1950. As a result of the Federal Financial Integration, the lines came to vest in the Government of India, with effect from 1st April 1950.

(d) *The Scindia State Railway*—The Scindia State Railway (narrow gauge–0·610 metre), 473 kilometres in length–integrated into the Central Railway on 5th November 1951, including Ujjain-Agar Branch was constructed, maintained, stocked and worked by the Gwalior Durbar. The railway was known as the Gwalior Light Railway up to 1940-1. The working of the trains and traffic of the railway was under the control of the Great Indian Peninsula Railway Company up to 30th June 1913. As a result of the Federal Financial Integration, with effect from 1st April 1950, the line came to vest in the Government of India.

The detailed history together with the progress of opening and the statistics of working of the constituent units of the Central Railway, upto the time each unit retained its separate entity, is given in Chapter I of the Supplement to the History of Indian Railways.

LINES COMPRISED IN THE SYSTEM—The Central Railway system is made up of—

	Open line Kilometres		Under construction or sanctioned for construction Kilometres
(i) Central Railway (broad gauge—1·676 metres)	6,111·36	(i) Diva-Panvel-Apta	41·10
(ii) Central Railway (metre gauge—1·000 metre)	1,545·53	(ii) Panvel-Uran	60·10
(iii) Central Railway (narrow gauge—0·762 metre)	515·12	(iii) Buttibori-Umer	33·70
(iv) Ellichpur-Yeotmal Railway (narrow gauge—0·762 metre)	189·60		
(v) Pulgaon Arvi Railway (narrow gauge—0·762 metre)	35·12		
(vi) Central Railway (narrow gauge—0·610 metre)	426·89		
Total	8,823·62	Total	134·90

ROUTE KILOMETRAGE ELECTRIFIED . . 297·54 Kilometres

Sections electrified—Suburban Working—

Victoria to Kurla (Harbour Branch), Ravli to Mahim, Kurla-Mankhurd Victoria to Kalyan Through and Local lines . . . 78·20 kilometres.

Main Lines—Kalyan to Poona, Kalyan to Igatpuri . . . 219·34 kilometres.

Date of first opening for public service of electrified kilometrage . . . 3rd February 1925.

RUNNING POWERS—

	Kilometres	Total Kilometres
Home Lines over other lines—		
Western Railway—		
Mahim to Bandra for local trains only	2·14	2·14
Northern Railway—		
(a) Naini Junction to Allahabad for passenger trains only	8·56	
(b) Tughlakabad to New Delhi for Passenger and goods trains	19·12	
(c) New Delhi to Delhi Main for Passenger trains only	2·40	
(d) Bhimsen to Juhi for passenger and goods trains	2·07	
(e) Juhi to Kanpur Central for passenger trains only	2·45	34·60
South Eastern Railway—		
Nagpur to Itwari Bazar for goods trains only	2·62	2·62
Total		39·36
Other lines over Home lines—		
Western Railway—		
Dadar Junction to Carnac Bridge for goods trains	6·81	
Mahim to Wadala (Raoli Junction Cabin) for goods trains	1·98	
Mathura Junction to revised junction point at kilometres 1518·61 beyond Faridabad for passenger trains	124·02	
Fatehpur to Belanganj for passenger and goods trains	4·88	
Jalgaon to Bhusaval for passenger and goods trains	25·34	170·57
Ujjain-Bhopal (from kilometres 837·40 to kilometres 840-08) for passenger and goods trains	2·68	
Bhopal chord line for goods trains	1·76	
Kotah-Bina (from kilometres 976·00 to 978·48) for passenger and goods trains	2·48	
Khandwa-Ajmer (M.G. from kilometres 630·23 to kilometres 630·86 Khandwa end) for passenger and goods trains	0·62	
Northern Railway—		
Yamuna Bridge to Agra Cantt. via Agra City for passenger and goods trains	6·84	
Agra Cantt. to Idgah (Agra) for passenger and goods trains	1·58	
Naini to Shankargarh for ballast trains only	37·56	85·38
Tughlakabad to Palwal for passenger trains	39·40	
carried over		255·95

CENTRAL RAILWAY SYSTEM—contd.

		Kilometres	Total kilometres
South Eastern Railway—	Brought forward .		255·95
(a)	Nagpur 'D' cabin outer signal to Ajni up yard	4·02	
(b)	Bahar line of Motibagh shed to Ajni up yard	3·81	
(c)	Ajni down yard to 'D' cabin outer signal	3 49	
(d)	Motibagh shed bahar line to Ajni down yard	3·32	
(e)	Nagpur passenger yard to outer signal 'D' cabin for passenger trains	1·59	
(f)	Motibagh shed bahar line to Nagpur passenger yard for passenger trains	1·57	
(g)	Bilaspur—Katni	6·44	
(h)	At Katni for passenger trains	0·55	
(i)	Katni—Marwara for goods trains	2·16	26·95
		Total .	282·90

(i) CENTRAL RAILWAY (BROAD GAUGE-1·676 METRES)

Progress in Opening

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Central Railway Proper—					
North East Line—					
Main Line—					
Bombay-Tuglakabad (Ex)—					
Buffer stop to kilometre 0·00	1853	0·32			
Victoria Terminus to Thana	18-4-1853	34·44			
Thana to Kalyan	1-5-1854	17·54			
Kalyan to Vasind	1-10-1854	25·62			
Vasind to Asangaon	6-2-1860	6·03			
Asangaon to Kasara	1-1-1861	35·15			
Kasara to Igatpuri (Thull Ghat)	1-1-1865	15·93			
Igatpuri to Nasik Road	28-1-1861	52·46			
Nasik Road to Chalisgaon	1-10-1861	140·40			
Chalisgaon to Jalgaon	6-10-1862	92·50			
Jalgaon to Bhusaval	20-5-1863	24·20			
Bhusaval to Burhanpur	20-11-1865	54·28			
Burhanpur to Khandwa	3-9-1866	68·85			
Khandwa to Bir	17-2-1868	34·04			
Bir to Itarsi	1-1-1870	143·67			
Itarsi to Hoshangabad	1-6-1882	17·32			
Hoshangabad to Bhopal	1-11-1884	75·54			
Centre of Bhopal Station to the joint boundary of the Bhopal-Itarsi and Indian Midland Railways at Bhopal.	11-11-1895	1·43			
Bhopal to Jhansi	1-1-1889	289·07			
Jhansi to Gwalior	1-3-1889	96·72			
Gwalior to Hetampur	20-12-1879	52·14			
Hetampur to Dholpur	5-5-1881	12·94			
Dholpur to Agra Cantonment	10-7-1878	59·06			
Agra Cantonment to Kosi Kalan	3-12-1904	90·59			
Kosi Kalan to Tuglakabad (Ex) (1518·61 Kilometres)	15-11-1904	79·50	1,519·74		
South East Line—					
Main Line—					
Kalyan-Raichur—					
Kalyan to Palasdhari	12-5-1856	50·43			
Palasdhari to Khandala (Bhore Ghat)	14-5-1863	20·78			
Khandala to Poona	14-6-1858	70·23			
Poona to Bhigvan (Diksal)	15-12-1858	103·40			
Bhigvan to Kurduwadi Junction	23-10-1859	81·43			
Kurduwadi Junction to Mohol	21-1-1860	45·58			
Mohol to Sholapur	6-6-1860	33·00			
Sholapur to Gulbarga	1-2-1870	113·13			
Gulbarga to Krishna	1-12-1870	117·99			
Krishna to Raichur	1-5-1871	21·64	657·61		
Carried over .				2,177·35	

CENTRAL RAILWAY SYSTEM—contd.

(i) CENTRAL RAILWAY (BROAD GAUGE—1·676 METRES)—contd.

PROGRESS IN OPENING—contd.

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward				2,177·35	
Bhusaval-Nagpur Line—					
Main Line—					
Bhusaval Junction to Malkapur	20-5-1863	48·40			
Malkapur to Shegaon	24-10-1864	52·36			
Shegaon to Badnera	18-12-1865	116·95			
Badnera to Pulgaon	16-7-1866	64·84			
Pulgaon to Sindi	5-11-1866	61·58			
Sindi to Nagpur	20-2-1867	47·26	391·39		
Itarsi-Allahabad Line— *Main Line—*					
Itarsi to Sohagpur	1-2-1870	47·59			
Sohagpur to Jabalpu	8-3-1870	195·31			
Jabalpur to Naini and Chheoki	1-8-1867	359·94	602·84		
Itarsi-Nagpur Line— *Main Line—*					
Itarsi to Betul	1-5-1913	106·85			
Betul to Amla	29-9-1914	23·03			
Amla to Narkher	4-9-1924	80·58			
Narkher to Katol	1-11-1923	25·37			
Katol to Nagpur	15-1-1923	61·29	297·12		
Wardha-Balharshah Line— *Main Line—*					
Wardha to kilometre 788·90 (Hinganghat)	1-2-1879	30·80			
Kilometre 788·90 (Hinganghat) to kilometre 825·01	24-12-1875	36·12			
Kilometre 825·01 to Warora	26-4-1876	6·44			
Warora to Balharshah	1-2-1908	60·04	133·40		
Balharshah-Kazipet Line— *Main Line—*					
Balharshah to Asifabad Road	15-11-1928	84·39			
Asifabad Road to Ramgundam	15-10-1927	57·09			
Ramgundam to Pedapalli	1-7-1924	17·44			
Pedapalli to Kazipet Junction	1-2-1924	75·55	234·47		
Wadi-Vijayawada Line— *Main Line—*					
Wadi Junction to Secunderabad	9-10-1874	185·80			
Husain Sagar to Hyderabad	9-10-1874	5·75			
Secunderabad to Warangal	8-4-1886	139·55			
Warangal to Dornakal	1-1-1888	84·75			
Dornakal to Bonakalu	5-8-1888	51·48			
Bonakalu to Vijayawada	10-2-1889	69·86	537·19		
Branch Lines— *Bombay Harbour Branch—*					
Buffer stop to kilometre 0·00	1925	0·33			
Victoria Terminus to Reay Road	4-2-1925	4·08			
Reay Road to Kurla	12-12-1910	11·64	16·05		
Mahim Chord—					
Ravli to Mahim	12-8-1914	1·88	1·88		
Carried over				4,391·69	

CENTRAL RAILWAY SYSTEM—contd.

(i) CENTRAL RAILWAY (BROAD GAUGE—1·676 METRES)—contd.

Progress in Opening—contd.

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward				4,391·69	
Kurla-Mankhurd Branch—					
Kurla to Chembur	4-2-1924	1·99			
Chembur to Mankhurd	1-7-1927	4·74	6·73		
Kurla-Trombay Branch—					
Kurla to Trombay	28-6-1954	6·75	6·75		
Karjat-Khopoli Branch—					
Palasdhari to Khopoli	12-5-1856	11·67	11·67		
Dhond-Manmad Branch—					
Dhond to Ahmednagar	15-3-1878	81·12			
Ahmednagar to Manmad including yard	17-4-1878	152·93	234·05		
Chalisgaon-Dhulia Branch—					
Chalisgaon to Dhulia	15-10-1900	56·25			
Jalgaon-Amalner	20-2-1900	0·87	57·12		
Bhopal-Ujjain Branch—					
Bhopal Yard	11-11-1895	2·67			
Bhopal Chord Line	—	1·76	4·43		
Bina-Kotah Branch—					
Bina Yard	23-9-1895	2·48	2·48		
Bina-Katni Branch—					
Bina Saugor	5-6-1889	72·83			
Saugor to Damoh	26-3-1898	76·97			
Damoh to Katni	1-1-1899	111·88	261·68		
Bilaspur Branch—					
Katni to Jhalwara	2-11-1886	7·64	7·64		
Jhansi–Manikpur Branch—					
Jhansi to Mauranipur	5-6-1889	64·21			
Mauranipur to Banda	1-8-1889	127·07			
Banda to Manikpur	15-2-1889	99·85	291·13		
Jhansi–Kanpur Branch—					
Jhansi to Chaunrah	1-2-1888	152·54			
Chaunrah to kilometre 1,342·87 (Near Juhi)	1-4-1886	62·53	215·07		
Banda–Kanpur Branch—					
Khairar to Bharwa Sumerpur	1-4-1947	47·32			
Bharwa Sumerpur to Yamuna South Bank	1-9-1948	10·57			
Yamuna South Bank to Hamirpur Road	6-3-1949	12·08			
Hamirpur Road to Bhimsen	1-9-1948	48·08	118·05		
Moth Quarry siding	26-7-1907	4·49			
Ait to Kunch	7-12-1903	13·53	18·02		
Agra Area—					
Raja-Ki-Mandi to Belanganj Depot	27-2-1906	2·84			
From Junction near east face of Belanganj Tunnel to Junction of Northern Railway at Agra City	3-2-1913	1·56			
Agra Cantt. to Idgah	1-3-1905	1·53			
Agra Military Ghee siding	1929	1·36	7·29		
Carried over				5,633·80	

CENTRAL RAILWAY SYSTEM—contd.

(i) CENTRAL RAILWAY (BROAD GAUGE—1·676 METRES)—contd.

Progress in Opening—contd.

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward				5,633·80	
Jalamb-Khamgaon Branch—					
Jalamb to Khamgaon	4-3-1870	12·42	12·42		
Badnera-Amraoti Branch—					
Badnera to Amraoti	16-2-1871	9·61	9·61		
Amla-Parasia Branch—					
Amla to Parasia	1-11-1915	87·07	87·07		
Majri-Rajur Branch—					
Majri to Rajur	4-5-1925	21·26	21·26		
Tadali-Ghugus Branch—					
Tadali to Ghugus	15-11-1918	14·02	14·02		
Vikarabad-Purli Vaijnath Branch—					
Vikarabad to Mohamadabad Bidar	14-1-1930	91·04			
Mohamadabad Bidar to Udgir (Nizam)	1-7-1932	81·56			
Udgir (Nizam) to Purli Vaijnath	1-3-1933	94·95	267·55		
Dornakal-Singareni Collieries—					
Dornakal to Singareni Collieries	1-1-1888	26·17	26·17		
Karepalli-Bhadrachellam Road Branch—					
Karepalli to Bhadrachellam Road	21-3-1927	39·46	39·46		
Total open kilometrage	..	..		6,111·36	
Quadruple Line—					
Main Line—					
Buffer Stop—Kilometre 0·00	1928	0·30			
Victoria Terminus to Curry Road	4-12-1905	6·90			
Curry Road to Thana	4-12-1915	27·33			
Thana to Kalyan	17-3-1916 1-3-1917	2·55 15·61			
Total Quadruple Line	..	..	52·69	52·69	
Double Line—					
North East Line—					
Main Line—					
Kalyan to Vasind	22-10-1866	27·83			
Vasind to Atgaon	20-2-1867	15·53			
Atgaon to Kasara	25-4-1867	25·65			
Kasara to Igatpuri	1-1-1865	15·90			
Igatpuri to Kajgaon	10-1-1869	207·59			
Kajgaon to Pachora	17-3-1869	25·83			
Pachora to Maheji	27-5-1869	14·71			
Maheji to Bhadli	6-3-1873	44·40			
Bhadli to Bhusaval	6-6-1873	12·62			
Bhusaval to Bhusaval Jn.	1-7-1892	1·29			
Bhusaval to Khandwa (Abna Junction)	11-1-1889	119·93			
Khandwa to Itarsi	16-10-1905	179·57			
Itarsi to Powarkheda	8-1-1962	7·71			
Powarkheda to Hoshangabad	15-2-1963	9·81			
Budni to Barkhera	20-2-1954	23·65			
Barkhera to Obaidullaganj	15-3-1964	10·92			
Misrod to Habibganj	1-12-1962	6·42			
Habibganj to Bhopal	7-1-1962	6·07			
Bhopal to Bhopal Chord Junction	25-11-1959	2·61			
Bhopal Chord Junction to Salametpur	24-2-1960	34·26			
Pabai to Bareth	7-1-1961	18·65			
Bina River to Bina	7-1-1961	6·31			
Agra Cantt. to Bilochpura	3-2-1913	6·28	823·54	823·54	

CENTRAL RAILWAY SYSTEM—contd.

(i) CENTRAL RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*concld.*

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward			823.54	823·54	
Double Line—contd.					
North East Line—contd.					
Main Line—contd.					
Mathura to (Brindaban Chhatikara)	1-12-1949	9·25			*Mathura Delhi doubling.
Brindaban to Chata	8-6-1957	21·29			
Chata to Hodal	1-12-1949	22·40			
Hodal to Palwal	16-7-1958	28·52			
Palwal to Ballabgarh	28-3-1958	22·78			
Ballabgarh to Tughlakabad (Ex).	30-1-1949 16-2-1949	16·41			
			120·65	944·19	
South East Line—					
Main Line—					
Kalyan to Palasdhari	12-5-1856	50·43			
Palasdhari to Khandala	14-5-1863	20·81			
Khandala to Lonavla	14-6-1858	3·79			
Lonavla to Malavli	29-5-1907	7·92			
Malavli to Talegaon	8-1-1908	21·74			
Talegaon to Dehu Road	22-5-1908	9·68			
Dehu Road to Poona	13-5-1908	24·79			
			139·16		
Bhusavai-Nagpur Branch—					
Main Line—					
Bhusaval to Bodwad	11-1-1889	28·32			
Bodwad to Shegaon	1-4-1890	72·23			
Shegaon to Murtizapur	30-3-1915	74·82			
Murtizapur to Badnera	9-11-1915	41·04			
Badnera to Dhamangaon	25-1-1917	46·28			
Dhamangaon to Dahegaon	1-5-1917	35·79			
Dahegaon to kilometres 749·15	12-3-1918	5·01			
Kilometres 749·15 to kilometres 765·24	30-8-1918	16·29			
Kilometres 765·24 to Sindi	21-12-1921	24·37			
Sindi to kilometres 828·00	6-5-1922	37·15			
Kilometres 828·00 to Nagpur	9-12-1918 19-1-1922	2·73 7·78			
			391·81		
Itarsi to Gurra	12-8-1962	10·25			
Bagratawa to Sohagpur	31-3-1964	22·94			
Salichauka Road to Gadarwara	31-3-1964	13·68			
Bhitoni to Bheraghat	6-12-1963	13·13			
Bheraghat to Madanmahal	14-12-1962	11·61			
Madanmahal to Jabalpur	9-2-1962	4·52			
Jabalpur to Adhartal	6-6-1963	8·33			
Adhartal to Deori	18-12-1963	8·86			
Deori to Gosalpur	31-12-1963	10·67			
Gosalpur to Sihore Road	29-3-1964	10·97			
Sihore Road to Dundi	13-12-1963	14·96			
Dundi to Sleemanabad	24-10-1963	9·20			
Sleemanabad to Katni South	16-12-1962	27·20			
Katni South to Katni	22-2-1964	1·43			
			167·75		
Wadi-Vijayawada Main Line—					
Bhongir to Alir	12-3-1964	22·15			
Pendial to Kazipet	24-2-1964	7·65			
Dornakal to Khammam	31-3-1964	22·84			
Khammam to Chintakani	28-3-1964	14·55			
Yorupalayam to Kondapalli	28-12-1962	24·40			
Kondapalli to Rayanapad	16-10-1962	4·80			
Rayanapad to Vijayawada	31-3-1962	6·55			
			102·94		
Bombay Area—					
Harbour Branch—					
Buffer stop to kilometre 0·00	..	0·30			
Victoria Terminus to Reay Road	4-2-1925	4·16			
Reay Road to Kurla	2-12-1910	11·57			
			16·03		
Mahim Chord—					
Raoli to Mahim	12-8-1914	1·87			
			1·87		
Kurla-Mankhurd Branch— Kurla to Chembur	18·3·1959	2·04	2·04		
Agra Area—					
From point of turnout north of Raja-ki-Mandi (kilometre 1346·90) to point of junction of up and down lines in Belanganj Yard (kilometre 1348·72)	3-2-1913	1·82			
From point of turnout to east face of Belanganj Tunnel (kilometre 1348·46) to point of junction of up and down lines at Bombay end at Agra City (kilometre 1348·54)	3-2-1913	0·11	1·93		
				1,767·72	
Total Double line	..	..	..		

CENTRAL RAILWAY SYSTEM—*contd.*

(*i*) CENTRAL RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

Details of Construction

Permanent way	Down Kilometres	Up Kilometres
North East line (Bombay to Tuglakabad Ex.)—		
The line is laid with the following permanent way:—		
52·10 Kilograms/metre (105 lbs/yard) FF rails laid on Wooden and C.I. Plate Sleepers	141·62	119·09
49·85 Kilograms/metre (100 lbs/yard) B.H. rails laid on C.I. Pot Sleepers	78·86	80·47
44·62 Kilograms/metre (90 lbs/yard) FF rails laid on Wooden and C.I. Plate Sleepers	1,300·35	798·23
South East Line (Kalyan to Raichur)—		
The line is laid with the following permanent way:—		
52·10 Kilograms/metre (105 lbs/yard) FF rails laid on Wooden, C.I. Plate and Steel Sleepers	39·32	..
49·85 Kilograms/metre (100 lbs/yard) B.H. rails laid on wooden and C.I. Pot Sleepers	13·68	52·50
44·61 Kilograms/metre (90 lbs/yard) FF rails laid on Wooden, C.I. Plate and Steel Sleepers	605·11	86·50
Bhusaval-Nagpur—		
The line is laid with the following permanent way—		
52·10 Kilograms/metre (105 lbs/yard) FF rails laid on C.I. Plate Sleepers	..	41·84
49·85 Kilograms/metre (100 lbs/yard) B.H. rails laid on C.I. Pot Sleepers	..	167·09
44·61 Kilograms/metre (90 lbs/yard) FF rails laid on C.I. Plate Sleepers	391·47	197·55
Itarsi–Nagpur—		
The line is laid with the following permanent way:—		
52·10 Kilograms/metre (105 lbs/yard) FF rails laid on C.I. Plate Sleepers	6·84	..
49·85 Kilograms/metre (100 lbs/yard) B.H. rails laid on C.I. Pot Sleepers	159·72	..
44·61 Kilograms/metre (90 lbs/yard) FF rails laid on C.I. Plate Sleepers	166·96	0·40
Bombay-Kalyan (Local line)—		
The line is laid with the following permanent way:—		
52·10 Kilograms/metre (105 lbs/yard) FF rails laid on Wooden and C.I. Plate Sleepers	..	8·85
49·85 Kilograms/metre (100 lbs/yard) B.H. rails laid on Wooden Sleepers	2·82	2·10
44·61 Kilograms/metre (90 lbs/yard) FF rails laid on Wooden and C.I. Plate Sleepers	49·89	41·84
Itarsi–Allahabad—		
The line is laid with the following permanent way:—		
52·10 Kilograms/metre (105 lbs/yard) FF rails laid on Wooden, C.I. Plate and Steel Sleepers	131·97	..
49·85 Kilograms/metre (100 lbs/yard) FF rails laid on C.I. Plate Sleepers	74·83	..
44·61 Kilograms/metre (90 lbs/yard) FF rails laid on Wooden C.I. Plate and Steel Sleepers	395·90	166·57
Wadi—Vijaywada—		
The line is laid with the following permanent way:—		
52·10 Kilograms/metre (105 lbs/yard) FF rails laid on C.I. Plate Sleepers	40·23	..
45·61 Kilograms/metre (90 lbs/yard) FF rails laid on C.I. Plate and Wooden Sleepers	438·14	49·08
42·37 Kilograms/metre (85 lbs/yard) FF rails laid on Steel Sleepers	56·33	58·34
Wardha–Balharshah—		
The line is laid with the following permanent way:—		
52·10 Kilograms/metre (105 lbs/yard) FF rails laid on Wooden Sleepers	..	41·03
49·85 Kilograms/metre (100 lbs/yard) B.H. rails laid on C.I. Pot Sleepers	..	22·55
44·61 Kilograms/metre (90 lbs/yard) FF rails laid on Steel Sleepers	..	63·58
Kazipet-Balharshah—		
The line is laid with the following permanent way:—		
52·10 Kilograms/metre (105 lbs/yard) FF rails laid on C.I. Plate Sleepers	..	19.31
42·37 Kilograms/metre (85 lbs/yard) FF rails laid on Steel Sleepers	..	215·25

Branches—

(*i*) The following branch line is laid with 49·85 kilograms/metre (100 lbs/yard). B.H. rails on C.I. Pot sleepers—

(1) Bina-Katni—The line is laid with 49·85 kilograms/metre (100 lbs/yard) B.H. 2nd hand rails laid on C.I. Pot Sleeper excepting 94·15 Kilometres, 1 metre of 44·61 kilograms/metre (90 lbs/yards) F.F. rails laid on Wooden and C.I. Pot Sleepers

(2) Tadale—Ghugus

(*ii*) The following branches are laid with 44·61 kilograms/metre (90 lbs/yard) F.F. rails on wooden sleepers—

(1) Harbour Branch (excepting V.T. Yard which is laid with 49·85 Kilograms /metre (100 lbs/yrd) B.H. rails laid on wooden sleepers and also Kurla yard with 52·10 kilograms/metre (105 lbs./yard) F.F. rails laid on wooden sleepers

(2) Mahim Chord.

(3) Kurla-Mankhurd. (Excepting 2·00 kilometres of 49·85 kilograms/metre (100 lbs/yard). B.H. rails laid on wooden sleepers).

(4) Raja-Ki-Mandi—Agra City.

(5) Jhansi-Kanpur

(6) Dhond—Manmad

(7) Amla—Parasia (excepting 36·21 kilometres of 42·37 kilograms/metre (85 lbs./yard) B.H. rails laid on C.I. Pot sleepers.

(8) Agra-Idgah

CENTRAL RAILWAY SYSTEM—contd.

(*i*) CENTRAL RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

DETAILS OF CONSTRUCTION—*concld.*

(*iii*) The following branch line is laid with 42·37 Kilograms/metre (85 lbs./yard) F.F. rails on trough sleepers—
Dornakal-Bhadrachellam Road.

(*iv*) The following branches are laid with 40·68 Kilograms/metre (82 lbs./yard) B.H. rails on C.I. Pot sleepers—

(1) Jalamb-Khamgaon.

(2) Badnera-Amraoti.

(3) Majri-Rajur.

(4) Bhimsen-Khairar (excepting 30·58 kilometres length with 44·61 kilograms/metre (90 lbs./yard) F.F. rails on C.I. Plate sleepers.)

(5) Karjat-Khopoli.

(6) Chalisgaon-Dhulia.

(7) Bina-Kotah (Bina yard only).

(8) Bhopal-Chord line.

(*v*) The following branches are laid with 39·68 kilograms/metre (80 lbs/yard). F.F. (I.M.R.) rails on C.I. Pot and trough sleepers—

(1) Jhansi-Manikpur (excepting 57·66 kilometres of 49·85 kilograms/metre (100 lbs./yard) B.H. rails laid on C.I. Pot sleepers and 123·92 kilometres of 44·61 kilograms/metre (90 lbs./yard) F.F. rails laid on C.I. Plate sleepers.

(2) East face of Belanganj Tunnel to Belanganj goods depot (wooden sleepers only).

(3) Bhopal-Ujjain (Bhopal yard only).

(*vi*) The following branch is laid with 37·13 kilograms/metre (75 lbs/yard). F.F. rails on trough sleepers—

Vikarabad-Purlivaijnath (excepting 47·87 kilometres of 42·37 kilograms/metre (85 lbs/yard) F.F. rails laid on trough sleepers.

(*vii*) Karepalli-Singareni Collieries—The line is laid with 42·37 kilograms/metre (85 lbs/yard). F.F. 2nd hand rails on trough sleepers—

(*viii*) (1) Ait-Kunch—The line is laid with 40·68 kilograms/metre (82 lbs/yard) B.H. 2nd hand rails laid on C.I. Pot sleepers.

(2) Moth Quarry siding (excepting 40 kilometres of 30·90 kilograms/metre (62 lbs/yard). F.F. rails on trough sleepers)

(*ix*) The following branch is laid with 34·23 kilograms/metre (69 lbs/yard). D. H. rails on C. I. Pot sleepers—

(1) Agra Military Ghee siding.

Ballast—The line is ballasted with broken stone, sand, gravel, laterite, kunkur and moorum.

Fencing—The whole of the Central Railway (broad gauge—1·676 metres) proper is fully fenced with the exception of the following lines which are partially fenced or completely not fenced.

(1) Wadi-Vijayawada—The line is, except for a few short distances, fenced.

(2) Vikarabad-Purli Vaijnath—The line is not fenced except at some important stations.

(3) Balharshah-Kazipet, Dornakal-Bhadrachellam Road and Karepalli-Singareni Collieries. The lines are not fenced.

Curves—On main line the sharpest curve has a radius of 293 metres on the Thull Ghat between kilometres 126 and 128.

On branches the sharpest curve has a radius of 183 metres on Kurla-Mankhurd Railway between kilometres 0·00 and 2.

Gradients—On the Central Railway proper the ruling gradients on ordinary sections of the main line vary from 1 in 100 to 1 in 200, with 1 in 100 banking sections near Vasind and Asavli. The ruling gradient on the Ghat section is 1 in 37 and on Harbour branch (electrified) 1 in 34 and on Itarsi-Nagpur section 1 in 70 in Ghat section. Between Jhansi-Manikpur 1 in 125. The Jhansi-Kanpur branch is practically level, except at Yamuna bridge approaches where the gradient is 1 in 250 and between Jhansi and Garhman where it is 1 in 200. On Bina-Katni, Amla-Parasia, Dhond-Manmad, Vikarabad-Purli Vaijnath and on Dornakal-Singareni in Bhadrachellam sections, the ruling gradient is 1 in 100.

CONTRACTS—Nil. The line is owned and worked by the Government of India.

RATES AND FARES—As fixed by the Central Government from time to time and subject to such powers as may be delegated to the Railway administration.

STATISTICS OF WORKING

Statistics prior to 1st April 1952 will be found separately for the constituent units in different tables relating to each one of them in the Supplement to the History of Indian Railways. Those given on the next page refer to all the gauges of the Central Railway, but figures for the Central Provinces Railway (i.e., the Ellichpur-Yeotmal and the Pulgaon-Arvi) are given separately in tables pertaining to this line. The figures for the Bhopal State Railway (Ruler's portion) have also been shown separately upto 1954-55 vide supplement to the History of Indian Railways after which the statistics of this Railway have been merged with those of the Central Railway as the Nawab of Bhopal 's interest and the share of net earnings in the Bhopal State Railway was terminated with effect from 3-9-1955 and a payment of Rs. 18 lakhs was arranged to him as per Board's letter No. F. (X) I—48-AC (2) dated 16-8-1955. For purposes of Statistics for the year 1951-2, the integration has been assumed to have been taken place on 1st April 1951 instead of 5 November 1951.

The figures of gain or loss do not include the receipts from subsidised Companies—share of surplus profits, railway miscellaneous receipts, miscellaneous railway expenditure, expenditure from subsidised railways and expenditure from Open Line Works—Revenue.

CENTRAL RAILWAY SYSTEM—contd.

(*i*) CENTRAL RAILWAY (BROAD GAUGE—1·676 METRES)—*concld.*

In comparing the fluctuations in the financial results, the followingchanges in accounting and financial structure of railways effective during the two years 1952-3 and 1953-4, should be borne in mind—

(*i*) The earning actually collected by a zonal railway either in cash or by book adjustment was taken in the accounts as the earning of that railway and no apportionment of earnings accruing from the traffic interchanged between the Indian Railways was made.

(*ii*) Inter-railway adjustments were not made in respect of the expenditure on manufacture, repair and overhaul of rolling-stock at workshops of one railway on behalf of another (except the independent manufacturing units like the Chittaranjan Locomotive Works and the Integral Coach Factory etc.).

(*iii*) No inter-railway adjustment was made in the financial accounts of freight charges for the carriage of railway stores fuel etc., i.e., so far as the financial accounts are concerned these stores were carried free of charge.

Table A—Central Railway Proper (All gauges combined—excluding worked lines)

Year	Route kilometrage open at end of each year	Total capital outlay including suspense, to end of each year, i.e. outlay on (i) lines open and (ii) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay, or capital-at-charge given in column (3)	Payment to General Revenues	Gain or loss to the State pertaining to each year (Gain +, Loss —)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1951-2§	8,419·12	1,61,42,64,528*	54,76,23,772	14,97,86,337	9·28	6,35,39,998	+8,62,46,339	1,244	72·65
1952-3	8,438·74	1,64,59,82,645	46,50,22,806	8,24,14,079	‡	6,59,45,482	‡	‡	‡
1953-4†	8,767·86	1,66,36,36,498	45,22,92,824	5,12,08,378	‡	6,61,92,383	‡	‡	‡
1954-5	8,772·90	1,70,67,86,965	56,78,16,744	15,74,56,360	9·23	6,74,09,861	+9,00,46,499	1,243	72·31
1955-6	8,842·10	1,82,14,72,063	63,31,52,638	17,86,23,762	9·80	6,87,03,450	+10,99,20,312	1,377	71·90
1956-7	8,298·22	1,96,49.19,516	69,12,09,239	19,66,70,765	10·01	7,42,36,513	+12,24,34,252	1,602	71·55
1957-8	8,353·91	2,18, 51,54,861	71,76,18,514	17,87,16,676	8·17	8,12,82,789	+9,74,33,887	1,652	75·10
1958-9	8,378·73	2,33,58,74,669	73,42,33,040	17,66,32,484	7·56	8,94,63,634	8,71,68,850	1,685	75·94
1959-60	8,481·06	2,35,78,24,129	81,13,33,249	24,41,33,313	10·35	9,43,69,595	14,97,63,718	1,840	69·91
1960-1	8,598·90	2,39,55,83,497	89,57,25,965	28,48,67,347	11·89	9,48,02,353	19,00,64,994	2,003	68·20
1961-2	8,598·90	2,64,42,50,970	94,55,36,938	28,24,15,980	10·68	12,68,53,436‖	15,55,62,544	2,114	70·13
1962-3	8,598·90	2,92,75,81,696	1,07,16,90,166	35,29,12,446	12·06	13,51,52,732‖	21,77,59,714	2,397	67·07
1963-4	8,598·90	3,23,23,96,138	1,16,54,18,748	37,14,28,855	11·49	15,52,43,134‖	21,61,85,721	2,606	68·16

NOTE—The figures of capital-at-charge are provisional pending closing of pre-partition accounts and the finalization of the balances of ex-States' Railway brought forward on 1st April 1950.

* Includes the capital-at-charge on the Latur Extension worked by the Barsi Light Railway; its net earning being credited to XVI-A Railway Miscellaneous Receipts.

† Includes statistics of Barsi Light Railway from 1 January, 1954 i.e. since its purchase by the Government. The purchase price was, however, financed from the Railway Development Fund and is accordingly not included in the figures of total capital outlay under column 3 above.

‡ These results have not been worked out as the figures of gross earnings and working expenses as booked in individual Railway's accounts during the year 1952-3 and 1953-4 did not represent the true system-wise apportioned and adjusted figures as stated above.

§Excludes figures relating to Government's share in Bhopal-Itarsi Railway, which are shown in separate table.

‖The figures of payment to General Revenues represent the amount of dividend only upto 1960-61. From 1961-62 to 1963-64 these figures are inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 2,40,11,265, Rs. 2,35,86,107 and Rs. 2,43,07,730 for the years 1961-62, 1962-63 and 1963-64 respectively.

Table B—Central Railway (Broad Gauge—1·676 metres)

1	2	3	4	5	6	7	8	9	10
1951-2	6,492·88	†	†	†	†	†	†	†	†
1952-3	6,512·62	†	†	†	†	†	†	†	†
1953-4	6,515·75	†	†	†	†	†	†	†	†
1954-5	6,520·54	1,61,17,98,019	53,29,13,881	14,83,43,317	9·20	6,36,58,255	+8,46,85,062	1,571	72·16
1955-6	6,589·74	1,72,26,38,900	59,59,47,597	17,01,86,880	9·88	6,49,75,597	+10,52,11,283	1,739	71·44
1956-7	6,113·03	1,85,90,79,496	65,51,37,016	19,52,33,524	10·50	7,02,37,777	+12,49,95,747	2,061	70·20
1957-8	6,110·00	2,07,14,63,543	67,84,46,287	17,58,52,074	8·48	7,70,53,731	+9,87,98,343	2,135	74·08
1958-9	6,111·20	2,21,82,29,262	69,45,46,045	17,78,95,503	8·01	8,49,57,833	9,29,37,670	2,185	74·38
1959-60	6,112·08	2,23,65,92,747	76,98,99,886	24.61,10,573	11·00	8,95,17,428	15,65,93,145	2,423	68·03
1960-1	6,111·36	2,26,98,77,228	84,89,51,505	28,54,78,557	12·58	8,98,27,678	19,56,50,879	2,671	66·37
1961-2	6,111·36	2,39,94,39,930	88,94,92,150	27,79,30,117	11·58	11,50,84,214‖	16,28,45,903	2,799	68·75
1962-3	6,111·36	2,67,52,94,731	1,01,03,68,512	34,69,32, 415	12·98	12,34,15,337‖	22,35,17,078	3,179	65·66
1963-4	6,111·36	2,97,59,45,543	1,09,99,90,918	36,87,55,498	12·39	14,26,86,573‖	22,60,68,925	3,461	66·46

NOTE—The figures of Capital-at-charge are provisional pending closing of pre-partition accounts and the finalization of the balances of ex-States' railways brought forward on 1 April 1950.

†Included in table A above as separate gaugewise figures were not recorded.

‖The figures of payment to General Revenues represent the amount of dividend only upto 1960-61. From 1961-62 to 1963-64 these figures are inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 2,17,63,416, Rs. 2,14,63,066 and Rs. 2,21,34,347 for the years 1961-62, 1962-63 and 1963-64 respectively.

CENTRAL RAILWAY SYSTEM—contd.

(ii) CENTRAL RAILWAY (METRE GAUGE—1·000 METRE)

Progress in Opening

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Hyderabad-Godavery Valley Railway—					
Manmad-Secunderabad—					
Main Line—					
Manmad to Jalna	21-10-1899	175·87			
Jalna to Sailu	7-12-1899	72·08			
Sailu to Parbhani	25-4-1900	42·49			
Parbhani to Nander	9-10-1900	59·51			
Nander to Sivangaon	23-8-1900	28·34			
Sivangaon to Secunderabad	25-4-1900	242·36	620·65		
Secunderabad Dronachellam Railway— Main Line—					
Secunderabad to Timmapur	1-2-1916	43·46			
Timmapur to Shadnagar	20-2-1916	14·89			
Shadnagar to Balanagar	6-3-1916	13·28			
Balanagar to Gullapalli	1-4-1916	14·48			
Gullapalli to Jadcherla	20-4-1916	7·64			
Jadcherla to Mahbubnagar	15-5-1916	17·70			
Mahbubnagar to Deverkudra	15-11-1916	24·54			
Deverkudra to Kurumurti	1-1-1917	15·29			
Kurumurti to Wanaparthi Road	15-2-1917	13·28			
Wanaparthi Road to Shriramnagar	1-2-1922	10·99			
Shriramnagar to Gadwal	1-7-1922	12·62			
Gadwal to Allumpur Road	20-7-1925	45·25			
Allumpur Road to Kurnool Town	1-9-1928	11·93			
Kurnool Town to Dronachellam	1-1-1909	51·35	296·70		
Branches— Purna-Hingoli Branch—					
Purna to Hingoli	15-5-1912	80·97	80·97		
Parbhani-Purli Vaijnath Branch—					
Parbhani to Gangakher	16-10-1929	34·02	63·47		
Gangakher to Purli Vaijnath	15-12-1929	29·45			
Jankampet-Bodhan Branch— Jankampet to Bodhan	1-11-1938	19·38	19·38		
Mudkhed-Adilabad Branch—					
Mudkhed to Hadgaon Road	1-8-1947	39·05			
Hadgaon Road to Himayathnagar	27-11-1948	18·37			
Himayathnagar to Dhanora	22-7-1949	30·36			
Dhanora to Kinwat	10-1-1950	28·80			
Kinwat to Adilabad	12-5-1950	45·46	162·04		
Khandwa-Hingoli Branch— Khandwa to Takal	2-6-1957	29·59			
Takal to Amlakhurd	15-4-1958	23·62			
Amlakhurd to Akola	2-1-1961	118·56			
Akola to Kanhargaon Naka	19-12-1959	101·45			
Kankhargaon Naka to Hingoli	13-10-1957	28·47	301·69		
Khandwa-Ajmer—					
Approach to Khandwa Yard	5-6-1957	0·63	0·63		
Total open kilometrage				1,545·53	

CENTRAL RAILWAY SYSTEM—contd.

(*ii*) CENTRAL RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Double Line					
Purna Junction Station Yard	15-5-1912	0·62			
Bolaram to Secunderabad	1-4-1924	13·13			
Secunderabad to Falaknuma	1-4-1924	14·93	28·68	28·68	

DETAILS OF CONSTRUCTION

Permanent Way	Down kilometres	Up kilometres
Hyderabad-Godavery Valley Railway—		
Manmad-Secunderabad—		
The line is laid with the following permanent way :		
40·68 kilograms/metre (82 lbs/yard) B.H. rails laid on C.I. Pot Sleepers	85·50	..
29·76 kilograms/metre (60 lbs/yard) F.F. rails laid on Wooden, C.I. Plate and Steel Sleepers . . .	535·51	13·07
Secunderabad-Dronachellam Railway—		
Main Line—		
The line is laid with the following permanent way—		
33·02 kilograms/metre (66¼ lbs/yard) F.F. rails laid on Steel Sleepers	61·15	..
29·76 kilograms/metre (60 lbs/yard) F.F. rails laid on Wooden C.I. Plate and Steel Sleepers . . .	235·37	14·89

Branches—

(*i*) Purna-Hingoli—The line is laid with 29·76 kilograms/metre (60 lbs./yard) F.F. rails on wooden C.I. plate and steel sleepers (excepting 3·22 kilometers of 33·02 kilograms/metres (66¼ lbs./yard) F.F. rails laid on steel sleepers.

(*ii*) Parbhani-Purli Vaijnath—The line is laid with 24·80 kilograms/metre (50 lbs./yard) F.F. rails on trough sleepers.

(*iii*) Jankampet-Bodhan—The line is laid with 29·76 kilograms/metre (60 lbs./yard) F.F. rails on wooden sleepers.

(*iv*) Mudkhed-Adilabad—The line is laid with 24·80 kilograms/metre (50 lbs./yard) F.F. rails on trough sleepers except 7·64 kilometres of 33·02 kilograms/metre (66¼ lbs./yard) F.F. rails laid on trough sleepers.

(*v*) Khandwa-Hingoli—The line is laid with 29·76 kilograms/metre (60 lbs./yard) F.F. rails on wooden and trough sleepers.

(*vi*) Khandwa-Ajmer—(Khandwa Yard)—The line is laid with 24·80 kilograms/metre (50 lbs./yard) F.F. rails on trough sleepers.

Ballast—The entire metre gauge system is ballasted with broken stone or moorum.

Fencing—

(1) *Hyderabad-Godavery Valley Railway* (*Manmad-Secunderabad*)—The line is fenced from kilometres 607·22 to 613·16 and between kilometres 400·73 to 402·34 and at all stations.

(2) *Secunderabad-Dronachellam Railway*—The line is fenced in the vicinity of principal towns and most important stations

(3) *Purna Hingoli Railway*—The line is not fenced except in station yards.

(4) *Parbhani Purli Vaijnath Railway*—No fencing provided.

(5) *Jankampet Bodhan Railway*—The line is fenced in vicinity of the P. W. D. road running very near the railway line and also Mahabudia Sugar Farm.

(6) *Mudkhed Adilabad Railway*—No fencing provided.

(7) *Khandwa-Hingoli*—The line is not fenced except in station yards.

Curves—The sharpest curve has a radius of 249 metres on Khandwa-Hingoli Section.

Gradients—

(1) *Hyderabad Godavery Valley Railway*—The ruling gradient is 1 in 133·33.

(2) *Secunderabad Dronachellam Railway*—The ruling gradient is 1 in 133·33.

(3) *Purna Hingoli Railway*—The ruling gradient is 1 in 133·33.

(4) *Parbhani Purli Vaijnath Railway*—The ruling gradient is 1 in 108.

(5) *Jankampet Bodhan Railway*—The ruling gradient is 1 in 100.

(6) *Mudkhed Adilabad Railway*—The ruling gradient is 1 in 66·66.

(7) *Khandwa-Hingoli Section*—The ruling gradient is 1 in 100.

Contracts and rates & fares—As noted under Central Railway—Broad Gauge.

CENTRAL RAILWAY SYSTEM—contd.

Statistics of Working

Table C—Central Railway (metre gauge—1·000 metre)

Year	Route kilometrage open at end of each year	Total capital outlay including suspense, to end of each year *i.e.* outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay, or capital-at-charge given in column (3)	Payment to General Revenues	Gain or loss to the State pertaining to each year (Gain +, Loss —)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1951-2	1,243·16	†	†	†	†	†	†	†	†
1952-3	1,243·16	†	†	†	†	†	†	†	†
1953-4	1,243·16	†	†	†	†	†	†	†	†
1954-5	1,243·16	7,32,73,714	2,58,20,254	72,43,959	9·88	28,93,959	+43,50,000	400	71·94
1955-6	1,243·16	7,71,15,866	2,72,95,205	72,85,023	9·45	29,08,706	+43,76,317	422	73·31
1956-7	1,243·16	8,55,28,765	2,68,84,955	10,28,571	1·20	32,31,358	—22,02,787	416	96·17
1957-8	1,301·87	9,33,80,338	3,01,29,245	23,66,450	2·53	34,73,536	—11,07,086	445	22·14
1958-9	1,325·52	9,73,58,569	3,10,69,994	4,90,281	0·50	37,28,818	—32,38,537	450	98·42
1959-60	1,426·97	10,09,41,920	3,23,44,396	10,50,763	1·04	40,40,101	—29,89,338	436	96·75
1960-1	1,545·53	10,54,19,654	3,60,14,987	10,52,864	1·00	41,71,857	—31,18,993	448	97·08
1961-2	1,545·53	22,45,46,750	4,48,23,368	53,67,350	2·39	1,03,11,992‖	—49,44,642	558	88·02
1962-3	1,545·53	23,20,09,039	5,02,98,912	79,69,779	3·43	1,03,94,100‖	—24,24,321	626	84·15
1963-4	1,545·53	23,63,60,581	5,34,94,247	56,01,321	2·37	1,11,88,319‖	—55,86,998	666	89·54

‖The figures of payment to General Revenues represent the amount of dividend only up to 1960-61. From 1961-62 to 1963-64 these figures are inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 15,78,752, Rs. 15,52,513 and Rs. 16,16,941 for the years 1961-62, 1962-63 and 1963-64 respectively.

Note—The figures of Capital-at-charge are provisional pending closing of pre-partition accounts and of the finalization of the balances of ex-State's railways brought forward on 1st April 1950.

† Included in table A as separate gaugewise figures were not recorded.

(*iii*) CENTRAL RAILWAY (NARROW GAUGE—0·762 METRE)

Progress in Opening

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Dhond Baramati Branch—					
Dhond to Baramati	20-5-1914	43·93	43·93		
Pachora-Jamner Branch—					
Pachora to Shendurni	1-4-1918	28·31			
Shendurni to Pahur	21-10-1918	11·32			
Pahur to Jamner	24-3-1919	16·09	55·72		
Dholpur-Tantpur Branch—					
Dholpur to Bari	24-2-1908	31·58			
Bari to Baseri	15-9-1913	14·18			
Baseri to Tantpur	1-7-1914	12·79	58·55		
Mohari-Sirmuttra Branch—					
Mohari to Barauli	10-2-1917	24·54			
Barauli to Sirmuttra	1-3-1929	6·13	30·67		
Kurduwadi-Latur Branch—					
Kurduwadi to Barsi Town	1-3-1897	34·75			
Barsi Town to Kuslamb	15-6-1905	10·20			
Kuslamb to Tadwale	1-5-1906	32·77			
Tadwale to Latur	1-5-1911	59·34	137·06		
Kurduwadi-Miraj Branch—					
Kurduwadi to a point 2·86 kilometre from Pandharpur Town.	2-12-1906	49·67			
A point 2·86 kilometre from Pandharpur Town to Pandharpur Station.	16-7-1915	2·86			
Pandharpur to Miraj	3-11-1927	136·66			
Total open kilometrage			189·19	515·12	

CENTRAL RAILWAY SYSTEM—contd.

Details of Construction

Permanent way—

(1) *Dhond-Baramati Branch—*

Permanent way—The permanent way consists of 17·36 kilograms/metre (35 lbs./yard) F.F rails laid on trough sleepers

Ballast—The line is ballasted with stone and banks with moorum.

Fencing—Only the station yards are fenced.

Curves—The sharpest curve is of 146 metres radius.

Gradient—The ruling gradient is 1 in 100.

(2) *Pachora-Jamner Branch—*

Permanent way—The permanent way consists of 34·23 kilograms/metre (69 lbs./yard) D.H. rails laid on second-hand C.I. Pot sleepers.

Ballast—The line is ballasted with moorum and sand.

Fencing—Fencing has only been provided for 91·44 metres on each side of first class level crossings.

Curves—The sharpest curve is of 436 metres radius.

Gradient—The ruling gradient is 1 in 100.

(3) (*a*) *Dholpur-Tantpur Branch*—The line is laid with 14·88 kilograms/metre (30 lbs./yard) F.F. rails on trough sleepers excepting 15·69 kilometres of 24·80 kilograms/metre (50 lbs./yard) F.F. 2nd hand rails laid on trough and wooden sleepers.

(*b*) *Mohari-Sirmuttra Branch*—The permanent way consists of 28·97 kilometres of 20·46 kilograms/metre (41¼ lbs./yard) F.F. rails and 1·61 kilometres of 24·80 kilograms/metre (50 lbs./yard) F.F. rails on wooden sleepers.

Ballast—The lines are ballasted throughout with stone.

Fencing—The line is fenced at important stations only.

Curves—The sharpest curve is of 436 metres radius.

Gradient—The ruling gradients are as follows—

(1) Dholpur to Tantpur 1 in 200.

(2) Mohari to Sirmuttra 1 in 100.

(4) *Kurduwadi-Latur and Kurduwadi Miraj Branches—*

Permanent way—Kurduwadi-Latur (excepting 8 kilometres/of 24·80 kilograms/metre (50 lbs./yard) F.F. 2nd hand rails laid on wooden sleepers) and 6·43 kilometres of 20·46 kilograms/metre (41¼ lbs./yard) F.F. rails on wooden sleepers. The line is laid with 17·36 kilograms/metre (35 lbs./yard) F.F. rails on trough sleepers. Kurduwadi-Miraj—The line is laid with 17·36 kilograms/metre (35 lb./yard) F.F. rails on trough sleepers, excepting 1·61 kilometres of 20·44 kilograms/metre (41¼ lbs./yard) F.F. rails laid on wooden sleepers.

Ballast—The line is ballasted with stone and moorum.

Fencing—The line is unfenced, except at station yard for a short distance on either side of level crossings and a few bridges.

Curves—The sharpest curve is of 137 metres radius.

Gradient—The ruling gradient is 1 in 100. There are, however, two steeper gradients on the original line (from Kurdwadi to Barsi Town)—one of 1 in 89 and other of 1 in 90; and two on the Tadwale Extension—one of 1 in 50 and other of 1 in 70.

(*iii*) CENTRAL RAILWAY (NARROW GAUGE—0·762 METRE)—*contd.*

Contract and Rates & Fares—As noted under Central Railway—Broad Gauge.

Statistics of Working

Table D—Central Railway (Narrow Gauge—0·762 and 0·610 metre)*

Year	Route kilometrage open at end of each year	Total capital outlay including suspense to end of each year *i.e.* outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay or capital-at-charge given in column (3)	Payment to General Revenues	Gain or loss to the State pertaining to each year (Gain +, Loss —)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1951-2 . . .	682·90	1,94,49,011	50,69,945	3,36,325	1·73	7,67,689	—4,31,364	142	86·73
1952-3 . . .	682·90	†	†	†	†	†	†	†	†
1953-4 . . .	1008·91	†	†	†	†	†	†	†	†
1954-5 . . .	1009·15	2,17,15,231	99,82,609	18,69,084	8·60	8,57,647	+10,11,437	190	81·27
1955-6 . . .	1009·15	2,17,17,297	99,09,835	11,51,859	5·30	8,19,147	+3,32,712	189	88·38
1956-7 . . .	942·01	2,03,11,255	91,87,268	4,08,670	2·01	7,67,378	—3,58,708	188	95·55
1957-8 . . .	942·01	2,03,10,980	90,92,982	4,98,152	2·45	7,55,522	—2,57,370	185	94·49
1958-9 . .	942·01	2,02,86,838	86,17,001	—17,53,300	86·4(Loss)	7,76,983	—25,30,283	175	120·35
1959-60 . .	942·01	2,02,89,462	90,88,967	—30,28,023	14·92(Loss)	8,12,066	—38,40,089	186	133·31
1960-1 . .	942·01	2,02,86,615	1,07,59,473	—16,64,074	8·20(Loss)	8,02,818	—24,66,892	220	115·46
1961-2 . .	942·01	2,02,64,290	1,12,21,420	—8,81,487	4·35(Loss)	14,57,230‖	—23,38,717	229	107·85
1962-3 . .	942·01	2,02,77,926	1,10,22,742	—19,89,748	9·81(Loss)	13,43,295‖	—33,33,043	225	118·04
1963-4 . .	942·01	2,00,90,014	1,19,33,583	—29,27,964	14·57(Loss)	13,68,242‖	—42,96,206	244	124·60

‖The figures of payment to General Revenues represent the amount of dividend only up to 1960-61. From 1961-62 to 1963-64 these figures are inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 6,69,097, Rs. 5,70,528 and R 5,56,442 for the years 1961-62, 1962-63 and 1963-64 respectively.

Note—The figures of Capital at charge are provisional pending closing of pre-partition accounts and the finalization of the balances of ex-states' railways brought forward on 1st April 1950.

† Included in table A as separate gaugewise figures were not recorded.

*The details of Progress of opening and construction of the narrow gauge lines (0·610 metre) of the Central Railway are given at page 50.

CENTRAL RAILWAY SYSTEM—contd.

(*iv*) ELLICHPUR-YEOTMAL RAILWAY (NARROW GAUGE—0·762 METRE)

Agents—Messrs Killick, Nixon & Co., Bombay

Date of registration of the Company—1910

This line was constructed by the late Great Indian Peninsula Railway Company for a Branch Line Company called the Central Provinces Railways Company.

Progress in Opening

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4
Ellichpur to Murtajapur	1-12-1913	76·94	
Murtajapur to Karanja Town	1-11-1914	31·90	
Karanja to Yeotmal	30-9-1915	80·76	
Total open kilometrage	..	..	189·60

Details of Construction

Permanent way—The permanent way consists of 30·90 kilograms/metre (62 lbs./yard) F.F., 24·80 kilograms/metre (50 lbs./yard) F.F. and 17·36 kilograms/metre (35 lbs./yard) rails laid on trough sleepers.

Ballast—The line is chiefly ballasted with broken stone and sand. Banks at places are ballasted with moorum.

Fencing—Only the station yards are fenced.

Curves—The sharpest curve is of 146 metre radius.

Gradients—The ruling gradient is 1 in 100.

Contract

On the termination of the contracts with the late Great Indian Peninsula Railway Company the line was brought under direct State management with effect from 1st July 1925, the Secretary of State having the authority to maintain and work the line either by the Agency of a railway company or the State under the terms of the following contracts—

Dated 27th March 1916, *between the Secretary of State and the Central Provinces Railways Company*, as to the construction, maintenance and working of the Ellichpur-Yeotmal Railway.

Corrigendum to the Agreement, dated 27th March 1916, as to compiling accounts and statistics annually instead of half-yearly. An *ad interim* payment of 90 per cent of approximate amount of net earnings being paid every half year to the Agents, Ellichpur-Yeotmal railway.

Dated 15th December 1916, *between the Secretary of State and the Great Indian Peninsula Railway Company*, as to the maintenance and working of the Ellichpur-Yeotmal Railway.

Dated 3rd October 1917 (supplemental to the contract of 27th March 1916), *between the Secretary of State and the Central Provinces Railways Company*, as to the construction and working of the Pulgaon-Arvi railway as part of, and included in the original undertaking.

Dated 2nd August 1918 (supplemental to the contract of 15th December 1916), *between the Secretary of State and the Great Indian Peninsula Railway Company*, as to the maintenance and working of the Pulgaon-Arvi Railway.

Deed

Dated 22nd September 1942 *between the Governor-General in Council and the Central Provinces Railways Company Ltd.* as to the assessment of rent payable by the Postal Department of the Government of India for Railway buildings, etc.

Main Provisions of Contracts

(*i*) *Land*—Land in British territory provided free of cost.

(*ii*) *Government aid*—The Government shall allow to the Company at the end of each year by way of rebate such a sum, not exceeding in any year the net earnings of the Great Indian Peninsula railway, from all traffic, originating or terminating at stations of this railway, as shall together with the net earnings of the Company make up an amount equal to interest for the year at a rate of 5 per cent per annum on the paid up share capital of the Company. When the net earnings do not suffice to pay interest at 5 per cent, the Company shall be paid by the working agency out of the working expenses the sum of Rs. 15,000 for each year towards the office expenses and expenses of management and direction of the Company and also pay all such legal expenses as shall have been incurred by the Company and are debitable to Revenue. When the net earnings excluding rebate exceed the interest at 5 per cent such excess, if less than Rs. 15,000 *plus* the amount of legal expenses, shall be applied towards the office expenses and expenses of management and direction and the legal expenses and the balance to make up the sum of Rs. 15,000 and the legal expenses shall be paid by the working agency out of the working expenses.

(*iii*) *Terms of working*—The line is supplied with plant and machinery, other than fixed machinery, and is managed, worked and maintained in respect of the railway station yards, sidings, rolling-stock etc., for 45 per cent of its gross earnings.

(*iv*) *Distribution of profits*—When the net earnings of the Company exceed the minimum amount sufficient to give a return of 5 per cent per annum such excess shall be applied towards the payment of office expenses, expenses of management and direction of the Company up to a limit of Rs. 21,000 and the balance, if any, shall be divided equally between Government and the Company. The Government's share is payable to the Great Indian Peninsula Railway.

(*v*) *Rates and fares*—As under the Central Railway.

(*vi*) *Special obligations as to the conveyance of*—

(*a*) Mails, troops, police, high Government officials and Government stores, and (*b*) Government bullion and coin, and the persons in charge thereof—All business connected with the management and maintenance of the line and conducting the traffic thereon, including police and telegraphs and telegraphic appliances, shall in all respects, as far as practicable, be carried on in the same manner and subject to the same regulations and control by the Secretary of State as the like business on the Great Indian Peninsula Railway.

CENTRAL RAILWAY SYSTEM—*contd.*

(*iv*) ELLICHPUR-YEOTMAL RAILWAY (NARROW GAUGE—0·762 METRE)—*contd.*

MAIN PROVISIONS OF CONTRACTS—*contd.*

(*vii*) *Power of the Government to determine contract*—The Government may, by giving not less than twelve months' "notice of purchase", determine the contract on 31st March 1947 or on 31st March in the last year of any subsequent period of ten years.

It has been decided by the Government of India not to determine the contract on 31-3-1957. The next option will fall due on 31-3-1967.

If the contract is determined by "notice of purchase," the Government shall pay to the Company 25 times the amount of the average yearly net earnings (excluding payments on account of rebate) derived by the Company during the three years immediately preceding the time at which the contract shall be determined, subject to a limit of 20 per cent in excess of, but not less than the total capital expenditure of the Company.

The Government may also, by giving twelve months' "notice of special purchase," determine the contract at any time in the following cases—

(*a*) when it is considered desirable that the gauge of the railway should be altered ;
(*b*) when it is considered desirable to convert the railway into a line of through communication ; and
(*c*) when it is considered desirable to extend the railway (without altering the gauge or making the line part of a through route), and the Company is unable or unwilling to supply the necessary capital for such extension.

If the contract be determined by "notice of special purchase", the Government to pay to the Company 25 times the average yearly net earnings (excluding payments on account of rebate) of the Company during the last preceding three years, or 115 per cent of the total capital expenditure of the Company, whichever may be the greater.

(*viii*) *Power of the Company to surrender contracts*—Nil.

(*ix*) *Term of contract* (*if not determined under vii*)—None specified.

STATISTICS OF WORKING (INCLUDING PULGAON-ARVI RAILWAY FROM 1917-8)

Year	Route Kilometrage open at end of each year	Total capital outlay, including suspense, to end of each year, *i.e.*, outlay on (*i*) lines open, and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Difference between Miscellaneous Receipts not credited to earnings and half share of interest charges on joint works not included in the percentage for working expense paid to the working agency	Rebate from (+) or share of surplus profits payable to (—), the Great Indian Peninsula Railway (Now Central Railway)	Total income	Percentage of total income on total capital outlay given in column (3)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11	12
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	Rs.	
1913-4	76·36	24,35,662	65,505	36,027	1·48	..	..	36,027	1·48	122	45·00
1914-5	108·59	62,43,618	2,86,101	1,57,356	2·52	..	..	1,57,356	2·52	51	44·00
1915-6	188·66	66,53,204	4,46,479	2,45,563	3·69	..	+4,402	2,49,965	3·76	45	45·00
1916-7	189·35	67,58,039	5,96,016	3,28,304	4·86	..	+16,590	3,44,894	5·10	61	45·00
1917-8	224·48	83,85,992	6,67,556	3,59,455	4·29	..	+32,115	3,91,570	4·67	57	*46·15
1918-9	224·48	84,02,787	9,11,563	5,05,648	6·02	..	—32,274	4,73,374	5·63	78	†44·53
1919-20	224·48	84,40,580	12,72,526	7,02,095	8·32	..	—1,29,428	5,72,667	6·78	109	‡‡44·83
1920-1	224·48	84,86,485	13,48,812	7,41,962	8·74	..	—1,49,370	5,92,592	6·98	116	45·00
1921-2	224·48	84,99,774	12,54,644	6,91,715	8·14	..	—1,23,389	5,68,326	6·69	107	45·00
1922-3	224·48	86,42,701	14,26,048	7,85,569	9·09	..	—1,52,127	6,33,442	7·33	122	44·91
1923-4	224·48	86,44,709	14,11,348	7,76,241	8·98	..	—1,44,085	6,32,156	7·31	121	45·00
1924-5	224·48	86,12,998	14,45,598	9,60,079	11·15	..	—2,35,863	7,24,216	8·41	150	45·00
1925-6	224·48	86,83,542	14,90,668	8,19,868	9·44	+1,697	—1,63,470	6,58,095	7·58	128	45·00
1926-7	224·48	88,61,181	12,87,332	7,08,033	7·99	+14,653	—1,01,380	6,21,306	7·01	110	45·00
1927-8	224·48	91,00,186	12,54,412	6,89,927	7·58	+18,041	—91,963	6,16,005	6·77	107	45·00
1928-9	224·72	91,29,844	13,65,861	7,51,224	8·23	+12,609	—1,36,417	6,27,416	6·87	117	45·00
1929-30	224·72	91,21,598	15,09,041	8,29,973	9·10	+11,204	—1,75,089	6,66,088	7·30	129	45·00
1930-1	224·72	91,49,995	12,32,389	6,77,814	7·41	+11,110	—98,962	5,89,962	6·45	106	45·00
1931-2	224·72	92,10,946	6,42,946	3,57,330	3·88	+10,013	+1,17,657	4,85,000	5·27	55	45·06
1932-3	224·72	92,86,461	7,71,921	4,24,557	4·57	+4,411	+56,121	4,85,089	5·22	66	45·00

* The increase of 1·15 per cent is due to the hire of rolling-stock paid to the Pachora-Jamner Railway.
† The decrease of 0·47 per cent is due to the hire of rolling-stock received from the Pachora-Jamner Railway.
‡ The decrease of 0·17 per cent is due to the hire of rolling-stock received from the Pachora-Jamner Railway.

CENTRAL RAILWAY SYSTEM—contd.

(*iv*) ELLICHPUR-YEOTMAL RAILWAY (NARROW GAUGE—0·762 METRE)—*concld.*

STATISTICS OF WORKING (INCLUDING PULGAON-ARVI RAILWAY FROM 1917-8)—*contd.*

Year	Route Kilometrage open at end of each year	Total capital outlay, including suspense, to end of each year, *i.e.*, outlay on (*i*) lines open, and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Difference between Miscellaneous Receipts not credited to earnings and half share of interest charges on joint works not included in the percentage for working expense paid to the working Agency	Rebate from (+) or share of surplus profits payable to (—), Great Indian Peninsula Railway (now the Central Railway)	Total income	Percentage of total income on total capital outlay given in column (3)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11	12
	Kilometres	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	Rs.	
1933-4	224·72	92,84,802	6,19,516	3,40,734	3·67	+3,527	+1,40,754	4,85,015	5·22	53	45·00
1934-5	224·72	93,57,788	5,99,433	3,29,688	3·52	+1,656	+1,53,683	4,85,027	5·18	52	45·00
1935-6	224·72	93,61,295	5,97,802	3,28,791	3·51	+532	+1,54,193	4,83,516	5·16	51	45·00
1936-7	224·72	93,71,859	5,85,515	3,22,033	3·44	+476	+1,61,085	4,83,594	5·16	50	45·00
1937-8	224·72	93,73,569	5,76,049	3,16,827	3·38	+300	+1,66,652	4,83,779	5·16	49	45·00
1938-9	224·72	93,67,904	5,87,827	3,23,305	3·45	+297	+1,60,815	4,84,417	5·17	50	45·00
1939-40	224·72	93,56,049	5,42,784	2,98,531	3·19	+308	+1,84,531	4,83,370	5·17	47	45·00
1940-1	224·72	93,67,286	6,81,495	3,74,822	4·00	—546	+1,09,582	4,83,858	5·17	58	45·00
1941-2	224·72	93,70,728	6,14,538	3,37,996	3·61	+803	+1,46,076	4,84,875	5·17	53	45·00
1942-3	224·72	93,70,746	6,80,494	3,74,272	3·99	—530	+1,11,202	4,84,944	5·18	58	45·00
1943-4	224·72	93,83,194	7,86,125	4,32,369	4·61	—912	+53,413	4,84,870	5·17	67	45·00
1944-5	224·72	94,13,444	10,88,943	5,98,918	6·36	—1,138	—53,455	5,44,325	5·78	93	45·00
1945-6	224·72	94,38,108	13,01,457	7,15,801	7·58	—1,510	—1,11,410	6,02,881	6·39	111	45·00
1946-7	224·72	94,38,492	12,77,135	7,02,424	7·44	—1,432	—1,04,231	5,96,761	6·32	109	45·00
1947-8(*e*)	224·72	94,69,448	14,57,487	8,01,618	8·47	—1,474	—1,53,423	6,46,721	6·83	125	45·00
1948-9	224·72	97,73,566	16,51,810	9,08,496	9·59	—1,505	—2,06,688	7,00,303	7·39	141	45·00
1949-50	224·72	94,79,871	15,43,088	8,48,698	8·95	—1,502	—1,76,784	6,70,412	7·07	132	45·00
1950-1	224·72	95,29,381	15,30,497	8,41,773	8·83	—1,465	—1,72,563	6,67,745	7·01	130	45·00
1951-2	224·72	95,45,242	18,30,641	10,06,853	10·55	—1,481	—2,54,719	7,50,653	7·86	157	45·00
1952-3	224·72	95,46,288	16,37,719	9,00,745	9·44	—1,435	—2,01,146	6,98,164	7·31	140	45.00
1953-4	224·72	95,49,029	18,89,564	10,39,260	10·88	—1,365	—2,70,422	7,67,473	8·04	162	45·00
1954-5	224·72	95,55,823	12,34,816	6,79,149	7·11	—1,358	—90,259	5,87,532	6·15	106	45·00
1955-6	224·72	95,57,350	13,88,678	7,63,773	7·99	—1,358	—1,32,472	6,29,943	6·59	119	45·00
1956-7	224·72	95,61,236	14,48,900	7,96,895	8·33	—1,390	—1,49,166	6,46,339	6·76	124	45·00
1957-8	224·72	95,61,236	16,26,894	8,94,792	9·36	—1,419	—1,98,291	6,95,082	7·27	105	45·00
1958-9	224·72	95,61,236	16,63,248	9,14,786	9·57	—1,640	—2,07,414	7,05,732	7·38	142	45·00
1959-60	224·72	95,61,236	14,87,449	8,18,097	8·56	—1,659	—1,59,281	6,57,157	6·87	127	45·00
1960-1	224·72	95,61,236	16,52,609	9,08,935	9·50	—1,715	—2,05,184	7,02,036	7·34	141	45·00
1961-62	224·72	95,64,616	17,20,161	9,46,089	9·89	—1,762	—2,23,607	7,20,720	7·54	147	45·00
1962-63	224·72	95,64,616	16,69,390	9,18,165	9·60	—1,742	—2,09,401	7,07,022	7·39	143	45·00
1963-64	224·72	95,64,616	18,82,680	10,35,473	10·81	—1,667	—2,68,252	7,65,554	8·00	161	45·00

(*e*) The figures for the year 1947-8 are provisional as the pre-partition accounts are still open.

(*v*) PULGAON-ARVI RAILWAY (NARROW GAUGE—0·762 METRE)

Agents—MESSRS KILLICK, NIXON & CO., BOMBAY

Date of registration of the Company—1914

Sanction to the construction of this line by the late Great Indian Peninsula Railway Company, for the Central Provinces Railways Company, was conveyed in Railway Board's Notification No. 248, dated 30th September 1914.

PROGRESS IN OPENING

Section of Railway	Date of opening	Kilometres	Total
1	2	3	4
Pulgaon to Arvi	25-9-1917	35·12	35·12

DETAILS OF CONSTRUCTION

Permanent way—The line is laid with 24·80 kilograms/metre/(50 lbs./yard) F.F. and 14·88 kilograms/metre/(30 lbs./yard) F.F. rails on steel sleepers.

Ballast—The line is ballasted with stone

Fencing—Only station platforms, B. Class level crossings and some cuttings alongside the Public Works Department road are fenced.

Curves—The sharpest curve is of 114 metres radius.

Gradients—The steepest gradient is 1 in 80.

CONTRACTS AND MAIN PROVISIONS OF CONTRACTS—Included in the particulars noted under Ellichpur-Yeotmal railways.

STATISTICS OF WORKING—Included with Ellichpur-Yeotmal railway.

(*vi*) CENTRAL RAILWAY (NARROW GAUGE—0·610 METRE)

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Matheran (Hill) Section—					
Neral to Mathran	22-3-1907	20·29	20·29		
Gwalior-Shivpuri Section—					
Gwalior to Shivpuri	2-12-1899	119·81	119·81		
Gwalior-Bhind Section—					
Gwalior to Bhind	2-12-1899	83·57	83·57		
Gwalior-Sheopur Kalan Section—					
Gwalior to Jora Alapur	1-1-1904	47·38			
Jora Alapur to Sabalgarh	1-12-1904	41·92			
Sabalgarh to Birpur	1-11-1908	31·46			
Birpur to Sheopur Kalan	15-6-1909	75·45	196·21		
Gwalior Suburban Line—					
Gwalior to Kampoo	29-11-1925	4·36	4·36		
Morar Cantt. Extension	1-11-1924	2·65	2·65		
Total open kilometrage	..	..	..	426·89	

CENTRAL RAILWAY SYSTEM—contd.

(*vi*) CENTRAL RAILWAY (NARROW GAUGE—0·610 METRE)—*contd.*

DETAILS OF CONSTRUCTION

(1) *Matheran (Hill) Section—*

Permanent away—The permanent way consists of 34·23 kilograms/metre (69 lbs./yard) D.H. 24·80 kilograms/metre (50 lbs./yard) F.F., 20·46 kilograms/metre (41¼ lbs./yard) F.F. and 14·88 kilograms/metre (30 lbs./yard) F.F. rails laid on C.I. Pot Steel and wooden sleepers.

Ballast—Broken stone.

Fencing—Not fenced.

Curves—The sharpest curve is of 15 metres radius.

Gradient—The ruling gradient is 1 in 20 compensated.

(2) (*a*) Gwalior-Shivpuri Section.
(*b*) Gwalior-Bhind Section.
(*c*) Gwalior-Sheopur Kalan Section.
(*d*) Gwalior-Kampoo.
(*e*) Morar Cantt. Extension.

Permanent way—The permanent way consists of 14·88 kilograms/metre (30 lbs./yard 17·95 kilograms/metre (36 lbs./yard) 20·46 kilograms/metre (41¼ lbs./yard) and 24·80 kilograms/metre (50 lbs./yard) F.F. rails laid on trough and wooden sleepers.

Ballast—The lines are fully ballasted throughout with broken stones, sand and moorum.

Fencing—The line is not fenced except in the Ujjain-Agar Section, where palliside wooden fencing is erected at few places in the crowded parts of the Ujjain city.

Curves—Sharpest curves are as follows—

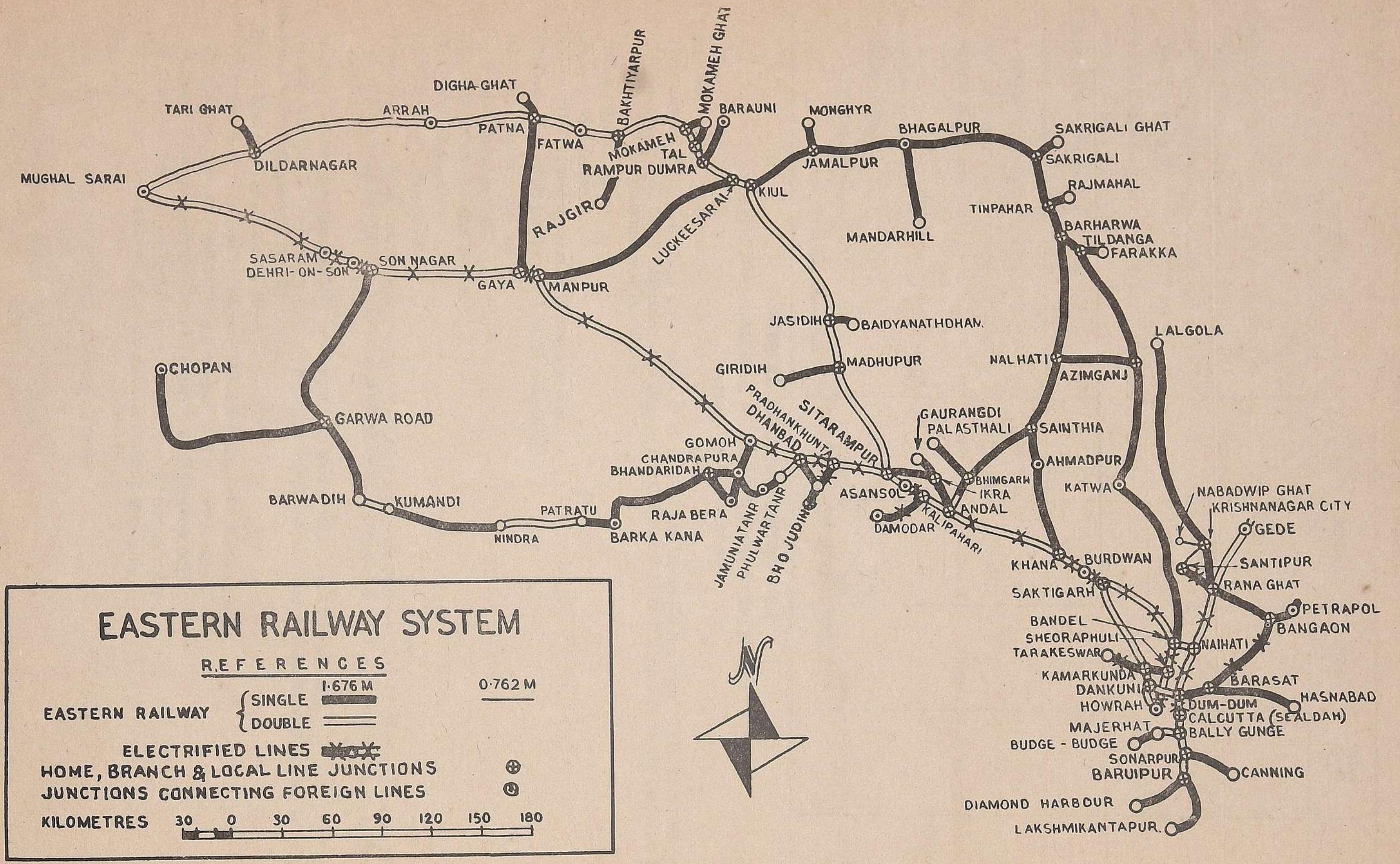
(1) Sharpest curve on Gwalior-Sheopur Kalan Section is of 116 metres radius.
(2) Sharpest curve on Gwalior-Shivpuri Section is of 99 metres radius.
(3) Sharpest curve on Gwalior-Bhind Section is of 109 metres radius.
(4) Sharpest curve on Gwalior-Kampoo Section is of 67 metres radius.
(5) Sharpest curve on Morar Cantt. Extension is of 109 metres radius.

Gradients—

(1) Gwalior-Sheopur Kalan—ruling gradient is 1 in 80.
(2) Gwalior-Shivpuri—ruling gradient is 1 in 40.
(3) Gwalior-Bhind—ruling gradient is 1 in 109.
(4) Gwalior-Kampoo—ruling gradient is 1 in 100.
(5) Morar Cantt. Extension—ruling gradient is 1 in 400.

CONTRACTS AND RATES AND FARES—As noted under Central Railway Broad Gauge (1·676 metres).

STATISTICS OF WORKING—Included under Table D—Central Railway (Narrow Gauge—0·762 metre) at page 46.


EASTERN RAILWAY SYSTEM
REFERENCES
1·676 M
0·762 M
EASTERN RAILWAY
SINGLE
DOUBLE
ELECTRIFIED LINES
HOME, BRANCH & LOCAL LINE JUNCTIONS
JUNCTIONS CONNECTING FOREIGN LINES
KILOMETRES 30 0 30 60 90 120 150 180
N
TARI GHAT
ARRAH
DIGHA-GHAT
BAKHTIYARPUR
MOKAMEH GHAT
BARAUNI
MONGHYR
BHAGALPUR
SAKRIGALI GHAT
SAKRIGALI
RAJMAHAL
TINPAHAR
BARHARWA
TILDANGA
FARAKKA
PATNA
FATWA
MOKAMEH
TAL
RAMPUR DUMRA
DILDARNAGAR
MUGHAL SARAI
RAJGIR
LUCKEESARAI
KIUL
JAMALPUR
MANDARHILL
SASARAM
DEHRI-ON-SON
SON NAGAR
GAYA
MANPUR
JASIDIH
BAIDYANATHDHAM
LALGOLA
CHOPAN
GIRIDIH
MADHUPUR
NALHATI
AZIMGANJ
GARWA ROAD
PRADHANKHUNTA
DHANBAD
SITARAMPUR
GAURANGDI
PALASTHALI
SAINTHIA
GOMOH
CHANDRAPURA
BHANDARIDAH
AHMADPUR
BHIMGARH
IKRA
ANDAL
KATWA
ASANSOL
BARWADIH
KUMANDI
PATRATU
RAJA BERA
NINDRA
BARKA KANA
JAMUNIATANR
PHULWARTANR
BHOJUDIH
DAMODAR
KALIPAHARI
NABADWIP GHAT
KRISHNANAGAR CITY
GEDE
KHANA
BURDWAN
SANTIPUR
SAKTIGARH
RANA GHAT
PETRAPOL
BANGAON
BANDEL
SHEORAPHULI
TARAKESWAR
NAIHATI
KAMARKUNDA
BARASAT
DANKUNI
HASNABAD
HOWRAH
DUM-DUM
CALCUTTA (SEALDAH)
MAJERHAT
BALLY GUNGE
BUDGE-BUDGE
SONARPUR
BARUIPUR
CANNING
DIAMOND HARBOUR
LAKSHMIKANTAPUR

CHAPTER III

EASTERN RAILWAY SYSTEM

HEADQUARTERS—Calcutta.

PRESENT SYSTEM—The Eastern Railway was formed on 14th April 1952 by integration of the following lines into a single unified system—

(a) the Sealdah, Howrah, Assansol and Dinapore Divisions and the Dhanbad Transportation Division of East Indian Railway—broad gauge (1·676 metres) and narrow gauge (0·762 metre).

(b) the entire Bengal Nagpur Railway—broad gauge (1·676 metres) and narrow gauge (0·762 metre).

But with the disintegration of lines on 1st August, 1955 the Bengal Nagpur Railway portion in its entirety was renamed South Eastern Railway and started functioning separately with Head Office at Gardenreach, Calcutta.

Administrative set up—The Eastern Railway Administration is headed by the General Manager who is assisted by the Senior Deputy General Manager and other Heads of Departments, viz., Chief Commercial Superintendent, Chief Electrical Engineer, Chief Engineer, Chief Engineer (Construction), Chief Mechanical Engineer, Chief Medical Officer, Chief Operating Superintendent, Chief Personnel Officer, Chief Security Officer, Chief Signalling and Tele-communication Engineer, Controller of Stores and Financial Adviser and Chief Accounts Officer. There are five Divisional offices at Asansol, Danapur, Dhanbad, Howrah and Sealdah, each under a Divisional Superintendent who is, in effect, an area General Manager.

HISTORY

East Indian Railway—Of the two lines, the East Indian was the older and the more important system. The railway belonged to the group of the six trunk line guaranteed railways formed at the commencement of the Railway Age in India.

Although the Great Indian Peninsula Railway had the distinction of opening the first railway in India to public traffic, the crucial discussions in connection with the commencement of railway construction in India were started by the sponsors of the East Indian Railway. The scheme was officially recognized in 1844 and in May 1845, the East Indian Railway Company was organized. The next two years were taken up with the preparation of estimates of cost and traffic and negotiations with the East India Company. Mr. Stephenson who was Managing Director—also, it is said, the founder—of the Company, proceeded in July 1845 with three Assistants to Bengal to survey the line from Calcutta to Delhi. The negotiations with the East India Company dragged on for another four years and it was only on 17 August 1849 that the contract was signed enabling the East Indian Railway Company to start construction and working an experimental line between Howrah and Rajmahal and later via Mirzapur to Delhi. The contract was for a period of 99 years with a guarantee of interest at 5 per cent. and the supply of land free of cost. The Government retained control to determine the standards of construction and to exercise entire control and supervision of working. The Government also had the option to purchase the Railway after 25 to 50 years.

Work on the project was started from 1851 and the first section of the experimental line from Howrah to Hooghly was opened for passenger traffic on 15th August 1854. The extension to Raniganj was completed in 1855. By 1862 the line had been taken to Mughalsarai *via* the present main line beyond Kiul. Meanwhile, the line between Allahabad and Aligarh Junction was also completed. Since 1862, the gaps between Howrah and Delhi were all linked, including the connection to Agra. With the opening of the Jumna Bridge in 1865, 1,636·07 kilometres of continuous line were completed, from the right bank of the Hooghly at Calcutta to the left bank of the Jumna at Delhi. In 1867 the completion of the Allahabad-Jabalpur Branch connected the Great Indian Peninsula Railway with the East Indian Railway.

The first construction preferred the main line route to Delhi. The Grand Chord line, which would have saved about 321·87 kilometres to Delhi, and in fact surveyed as early as 1851, was not taken up as the route along the fertile valley of the Ganges ensured the traffic for the railway from such important towns and trading centres as Bhagalpur, Monghyr, Patna, etc. Although the Chord lines were sanctioned in 1895 they were completed and opened to traffic only in 1906, the delay being due to the nature of the terrain, the dense forest region, and the need to build tunnels. Coal traffic also developed only gradually, till it attained large-scale dimensions during the period of the World War I, when foreign sources of supply were virtually cut off.

The East Indian Railway also worked the Patna-Gaya and Naihati-Azimganj lines built by the State, as well as the South Bihar and Tarakeswar branches constructed by other railway companies. Eventually, these lines became part of the East Indian Railway system.

The original contract with the East Indian Railway Company was found to operate rather unfavourably to the Government of India. Consequently, Government availed themselves of the option to determine the contract after 30 years. The property owned by the old guaranteed East Indian Railway Company was purchased by the State on 31st December 1879 and the line was worked by a reconstituted company to end of 1924. Under the revised contract entered into with the reconstituted company with effect from 1st January 1880, the State was assured of a larger share of the profits than was received by it under the previous arrangements. The revised contract under which the railway was leased to the Company for a term of 50 years also provided that it was determinable on 31st December 1919 or five years later. Towards the end of the World War I, public demand for the acquisition of State-owned Railways from the management of non-Indian Companies had gathered considerable strength and it was decided to determine the existing contract on 31st December 1924. The Railway was taken over for direct management by the State with effect from 1st January 1925.

On 1st July 1925, the State-managed Oudh and Rohilkund Railway, which was amalgamated with the East Indian Railway, was reorganized into two Divisions, the Lucknow and Moradabad Divisions of the new system. Other changes made were the transfer of the Jabalpur branch to the Great Indian Peninsula Railway and of the Ghaziabad-Delhi and Delhi-Kalka sections to the North Western Railway. The South Bihar Railway owned by the South Bihar Railway Company and the Hardwar-Dehra Railway owned by the Hardwar Dehra Branch Railway Company, both of which were worked by the Government through the agency of the East Indian Railway Company, were purchased on 30th June 1939 and 31st December 1939, respectively and thus became an integral part of the East Indian Railway system.

The Sealdah Division which fell in India on the partitioning of the Bengal-Assam Railway, was attached to the East Indian Railway on 15th August 1947. This section recalls memories of Pioneer Railway enterprise in Bengal by the Calcutta and Southern Railways, later transformed into the Eastern Bengal Guaranteed Railway and subsequently acquired by the state to be formed into the Eastern Bengal Railway system. The earliest constructions in this division were in 1862, when the sections from Calcutta to Ranaghat and beyond and from Calcutta to Sonarpur were completed by the Eastern Bengal Railway Company and the Calcutta and South Eastern Railway Company respectively. Next year the rail at Sonarpur was extended to Port Canning. The Calcutta-Port Canning line was in fact, the first strip of railway to come under State management in India, and this was necessitated soon after construction, chiefly by the low economic return of the line while under Company management. The Calcutta-Diamond Harbour line or rather the line from Sonarpur to Diamond Harbour was built in 1883.

EASTERN RAILWAY SYSTEM—contd.

The section from Dum Dum Junction to Bongaon and beyond was opened between 1883-4. The link between Ranaghat and Bongaon was also completed in 1882. The Murshidabad Branch from Ranaghat to Lalgola Ghat was opened between 1905—07. The Eastern Bengal Railway came under State ownership in 1884. At Bongaon and Banpur on Indo-Pakistan Border, the Sealdah Division links up with the Eastern Bengal Railway (Pakistan).

With effect from 14th April 1952, the Sealdah, Howrah, Asansol and Dinapur Divisions and the Dhanbad Transportation Division of the E. I. Railway have been amalgamated with the Eastern Railway and the Allahabad, Lucknow and Moradabad Divisions integrated with the Northern Railway.

The detailed history along with the progress of opening and the statistics of working of the constituent units of the Eastern Railway upto the date each unit retained its separate entity, is given in chapter II of the Supplement to the History of Indian Railways.

LINES COMPRISED IN THE SYSTEM—The Eastern Railway System is made up of—

	Open line kilometres	Under construction or sanctioned for construction kilometres
(i) Eastern Railway (broad gauge—1·676 metres)	4,021·82	..
(ii) Eastern Railway (narrow gauge—0·762 metre)	27·58	..
Total	*4,049·40	..

ROUTE KILOMETRAGE ELECTRIFIED—846·00 kilometres

Running Powers—

	(kilometres)
Home line over other lines—	
Northern Railway—	
Mughalsarai to Varanasi for passenger and goods trains	15·08
Mughalsarai to Allahabad for goods trains	150·40
Chopan to Chunar for goods trains	102·75
Total	268 23
Other lines over home line—	
South Eastern Railway—	
At Howrah (passenger trains only)	1·75 Double line
At Asansol (passenger and goods trains)	0·80 Single line
At Katrasgarh (passenger and goods trains)	1·06 Single line
At Joint line from Chandrapura to Barkakana including Argada Branches (goods trains only)	87·53 Single line
At Tikapara to Dum Dum (goods trains only)	26·83 Double line
At Dum Dum to K. P. Docks Junction (goods trains only)	19·10 Double line
	137·07
Eastern Bengal Railway (Pakistan)—The boundary between the stations Darsana and Gede to Ranaghat	43 96
The boundary between the stations Benapol and Petrapal to Bongaon	6·55
Total	50·51

*Total kilometrage excludes 67·66 kilometres as per Rly. Board's letter no. 61/Stat III/2 Stat. 8 dt. 29-9-1961.

(i) EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Ex-East Indian Railway Portion					
Main Line—					
Howrah to Hooghly	15-8-1854	37·47			*Out of this, 7·36 kilometres have been handed over to the South Eastern Railway, which have not been included in the total.
Hooghly to Pandooah	1-9-1854	23·03			
Pandooah to Khana Jn.	3-2-1855	59·30			
Khana Jn. to Raneegunge	3-2-1855	73·56			
Raneegunge to Siarsol (Near Asansol)	21-7-1863	2·74			
Avoiding line between Damodar and Kalipahari	11-1-1961	13·39*			
Avoiding line between Damodar and Kalipahari	April 1963	2·30††			†† The entire line has been transferred to the South Eastern Railway and has not been included in the total in Columns 4 & 5.
Avoiding line between Ratibatti and Searsole	8-10-1960	5·75			
Searsole to Sitarampur	1-1-1865	24·38			
Sitarampur to Luckeesarai Jn.	1-1-1871	200·51			
Luckeesarai to Dinapore	17-11-1862	132·64			
Dinapore to Mughalsarai	22-12-1862	202·65			
Nuri—Ranchi Hathia Section					
Bandaria—Nuri	10-11-1959	§			§Worked by S.E. Railway.
			765·76		
Loop Line—					
Khana Jn. to River Adjai	3-10-1858	33·58			
River Adjai to Sainthia	3-9-1859	38·80			
Sainthia to Tinpahar	15-10-1860	122·53			
Tinpahar to Bhagalpur	1-11-1861	111·89			
Bhagalpur to Jamalpur	10-2-1862	55·49			
Jamalpur to Kiul	7-11-1862	45·09			
Direct entrance from Sakrigali Jn. to Sakrigali Ghat	31-3-1951	1·93			
Restoration of Tinpahar-Rajmahal branch	31-3-1952	11·84			
			421·15		
Grand Chord—					
Sitarampur to Barakar	1-1-1865	8·74			
Barakar to Dhanbad	20-5-1894	41.44			
Dhanbad to Paharpur	6-12-1906	166·87			
Paharpur to Manpur	15-8-1906	28·04			
Manpur to Gaya	1899	5·55			
Gaya to Mughalsarai	1-3-1900	191·43			
Portion of Mughalsarai section from kilometres 1·509 to 4·533.	13-3-1959	@3·03			@Taken over from Northern Railway.
Mughalsarai—Allahabad section from kilometres 674·19 to 678·42.	13-3-1959	@4·23			
			449·33		
Carried over				1,636·24	

EASTERN RAILWAY SYSTEM—contd.

(i) EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward .				1,636·24	
Ex-East Indian Railway Portions—contd.					
Howrah Burdwan Chord—					
A point 9·65 kilometres from Howrah to Saktigarh	1-1-1917	72·84	72·84		
Branches on the Main Line—					
Tarakeswar Branch—					
*Sheoraphuli to Tarakeswar	1-1-1885	35·78	35·78		*The line was constructed by the Tarakeswar Railway Coy. and worked by the East Indian Rly. Coy. under an agreement upto the 31st Dec. 1914. It was acquired by the State and incorporated with the East Indian Rly. on 1st January 1915.
Naihati Branch—					
Bandel Jn. to Naihati	15-3-1887	7·19	7·19		
Bandel Burharwa Branch—					
Bandel Jn. to Nabadwip	1-4-1912	65·13			
Nabadwip to Katwa	15-5-1912	39·33			
Katwa to Jangipur Rd.	1-5-1913	107·51			
Jangipur Rd. to Dhulian Ganges . . .	31-1-1913	27·94			
Line between Tildanga-Barharwa Jn. . . .	4-4-1961	5·80			
Dhulian Ganges to Barharwa	19-1-1911	26·94			
Gumani Avoiding line	23-4-1963	1·60	274·25		
Diversion between Nimtita-Tildanga . . .	30-9-1963	14·57	14·57		
Sakrigalighat Branch—	15-10-1920	1·93			
Extension of new Sakrigalighat branch . .	Feb. 1942	2·09	4·02		
Ondal Sainthia Chord—					
Ondal to Sainthia	10-12-1906	70·52	70·52		
Bhadreswar Ghat Branch—					
Bhadreswar to River Bank	6-12-1892	4·18	4·18		
Kasta Coalfield Branch—					
Kilometre 209·89 on the Ondal Sainthia Chord to Palesthalai.	15-5-1922	27·38	27·38		
Ondal Loop—					
Ondal to Baboisole	1-5-1864	3·27			
Baboisole to Mangalpur	1-1-1863	4·41			
Mangalpur to Toposi	2-2-1863	4·27			
Toposi to Ikrah Jn.	15-4-1894	3·89			
Ikrah Jn. to Gaurangdi	1-6-1895	22·85			
Buktarnagar—Ondal Connection . . .	16-11-1920	1·46	40·15		
Toposi Barabani Chord—					
Toposi to kilometre 6·10	15-6-1908	6·10			
Kilometre 6·10 to kilometre 10·46 . . .	19-4-1915	4·36			
Kilometre 10·46 to Barabani	1-4-1925	7·44	17·90		
Ikrah Branch—					
Ikrah Jn. to Barabani	15-4-1894	13·52			
Barabani to Sitarampur	15-4-1902	11·23			
Hatidah Jn. —Baruni Section	1-5-1959	24·54	49·29		
B.A. Railway Sections amalgamated after partition of the B. A. Railway on 15-8-1947					
Main Line—					
Calcutta to kilometre 115·87	29-9-1862	116·84			
Barrackpore Race Course Line	27-1-1928	2·48			
Up and Down Calcutta Chord Railway . .	1-2-1932	2·30			
Portion of Naihati Bandel	15-3-1887	1·38			
Halisahar-Bandel	1945	2·91	125·91		
Carried over .				2,380·22	

EASTERN RAILWAY SYSTEM—contd.

(i) EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward				2,380·22	
Ex-East Indian Railway Portions—contd.					
Main Line—contd. *Murshidabad Section*—					
Ranaghat to Bhagwangola	1-9-1905	144·19			
Bhagwangola to Krishnapur	10-11-1905	9·50			
Krishnapur to Lalgolaghat (including Nashipur Road Section).	15-7-1907	*8·69	153·69		*Dismantled on 15-3-1959.
Southern Section— Kakurgachi Chord Line	1-2-1907	2·58			
Kakurgachi to Gobra High level Goods line to Dock.	14-6-1919	7·29	9·87		
Diamond Harbour Branch— Calcutta (Belliaghata) to Sonarpur	2-1-1862	16·53			
Sonarpur to Baruipur	10-6-1882	8·53			
Baruipur to Mograhat	18-12-1882	14·93			
Mograhat to Diamond harbour	25-4-1883	19·52	59·51		
Budge Budge Branch—					
Ballygunge to Budge Budge	1-5-1890	21·66	21·66		
At Brace Bridge increase because of diversion of track.	1-10-1960	0·16§	0·16		§4·18 kilometres were dismantled and 4·34 kilometres constructed and opened on 1-10-1960.
Canning Branch—					
Sonarpur to Champahati	2-1-1862	8·05			
Champahati to Port Canning	15-5-1863	19·57			
Bansara Diversion Extension	17-11-1902	1·30	28·92		
Lakshmikantapur Branch—					
Baruipur to Lakshmikantapur	15-12-1928	37·23	37·23		
Central Section—					
Dum Dum Jn. to Duttapukur	2-4-1882	22·93			
Duttapukur to Gobardanga	7-12-1883	27·36			
Gobardanga to Bongaon	22-4-1884	24·66			
Ranaghat to Bongaon	16-10-1882	34·02	108·97		
Hasnabad Branch— Barasat-Hasnabad	9-2-1962	53·06	53·06		
Santipur Branch—					
Churni Bridge to Santipur	31-5-1925	16·11	16·11		
Chitpur Section—					
Dum Dum Junction-Chitpur Low level crossing	10-12-1913	2·25	2·25		
Salanpur Branch—					
Salanpur to Shamdi	7-9-1894	6·90			
	1-1-1897	2·00	8·90		
Giridih Branch—					
Madhupur Junction to Giridih	1-1-1871	42·97	42·97		
Deoghar Branch(†)—					
Jasidih Junction to Baidyanathdham	23-12-1882	6·63	6·63		†This line was constructed on the metre gauge(1·000 metre) and worked by M/s Burn and Co. of Calcutta upto 30 June, 1911. It was acquired by the State and incorprated with the E.I. Railway on 1st July, 1911 and converted to broad guage (1·676 metres) on 13th September 1913.
Mokamehghat Branch—					
Tal Junction via Mokamehghat to Mokameh Jn.	1-5-1883	5·96	5·96		
Hatidahghat Branch— Hatidah Junction to Hatidahghat	26-11-1925	0·35			
	1-11-1926	1·37	1·72		
Carried over				2,937·83	

EASTERN RAILWAY SYSTEM—contd.

(i) EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward				2,937·83	
Ex-East Indian Railway Portions—contd.					
Main Line—contd.					
Patnaghat Branch—					
Patna to Patnaghat	17-11-1862	1·40	1·40		
*Patna-Gaya Branch**—					*This line was constructed by the State and worked by that agency upto 1882. It was made over to the E. I. Railway Company to be worked under an Agreement, on 1st January, 1883 and incorporated with the East Indian Railway.
Patna Junction to Patna	2-6-1879	0·40			
Patna Junction to Jehanabad	21-4-1879	46·59			
Jehanabad to Gaya	2-6-1879	45·84	92·83		
South Bihar Railway—					
Luckeesarai to Wazirganj	5-7-1899	122·18	122·18		
Wazirganj to Gaya	10-7-1899				
Bakhtiarpur Rajgir Branch—					
Bukhtiarpur-Bihar Shariff	7-2-1962	29·29			
Bihar Shariff-Rajgir	1-4-1962	24·54	53·83		
Digha Ghat Branch—					
Patna Junction to Dighaghat	2-4-1885	8·90	8·90		†This line is the old Dildarnagar-Ghazipur State Railway which was incorporated with the East Indian Railway on 1st January, 1889.
Tarigha Branch(†)					
Dildarnagar Junction to Tarighat	5-10-1880	19·31	19·31		
Branches on the Loop line—					
Azimganj Branch(‡)—					(‡) This line was constructed by the Indian Branch (afterwards Oudh Rohilkhand Railway Company as a 1·22 metre gauge line. It was purchased by the State on 31st March, 1872, incorporated with the East Indian Railway on 1st April, 1892 and opened on the broad gauge (1·676 metres) on 15 July, 1892.
Nalhati to Azimganj	21-12-1863	43·82	43·82		
Bhagalpur-Bansi Branch—					
Bhagalpur to Mandar Hill (*a*)	24-4-1954	50·00	50·00		
Sultangunge Ghat Branch—					
Sultangunge Junction to Sultangunge Ghat	6-5-1895	1·87	1·87		
Monghyr Branch—					
Jamalpur Junction to Monghyr	10-4-1862	9·14	9·14		(*a*) The Section Bhagalpur to Mandar Hill originally opened on 1 October, 1926 but was taken up during the World War II and restored on 25th April, 1954.
Branches on the Grand Chord—					
Chunch Branch—					
Chunch blockhut to kilometre 317·52	1-2-1893	4·64			
	5-8-1896	1·56	6·20		
Link between Main Line and Grand Chord at Sitarampur	3-1-1919	2·03	2·03		
Borachuck-Sodepur-Aldih link	15-3-1957	6·50	6·50		
Pandra Branch—					
Pandra blockhut to kilometre 243·67	26-11-1900	4·28	4·28		
Pradhankhanta Pathardihi Chord—					
Pradhankhanta to Pathardihi	1-1-1913	15·43	15·43		
Katras Branch—					
Dhanbad to Katrasgarh and beyond	20-5-1894	14·66			
	1-11-1918	3·78	18·44		
Damuda Branch—					
Kusunda to Jharia	30-6-1895	5·58			
Jharia to Pathardihi	30-6-1895	5·47			
	15-7-1896	2·85	13·90		
Jhenagurah Golukdih Branch	20-9-1921	5·13			
	31-3-1933	1·39	6·52		
Carried over				3,414·41	

EASTERN RAILWAY SYSTEM—contd.

(*i*) EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward .				3,414·41	
Ex-East Indian Railway Portions—contd.					
Jharia Branch—					
Dhanbad to Jharia	1-5-1903	6·03	6·03		
Kusunda to Tetulmari (including portion of Chandur branch).	20-4-1907 6-12-1906	5·07	5·07		
Katras-Khanoodih Extension—					
Katrasgarh to Khanoodih	7-3-1903	11·54	11·54		
Jamuniatand Link—					
Khanoodih extension, kilometre 293·83 to kilometre 297·00 on the Bokaro Colliery Joint line.	11-10-1916	3·17	3·17		
Katras-Mulkera Cross Connection—					
Northern half of connection	15-8-1903	1·06	1·06		
Katras Grand Chord link	1-11-1918	4·26	4·26		
Jhennagurah Branch	31-10-1904	3·72	3·72		
Barun Daltonganj Branch—					
Sone East Bank (Barun) to Rajhara . . .	3-5-1902	108·31			
Rajhara to Daltonganj	5-12-1902	17·25	125·56		
Gomoh-Chandrapura Chord	1-5-1927	16·03	16·03		
Chandrapura to Bermo*	1-9-1915	18·64			*These Sections were constructed by the B. N. Railway and transferred to E. I. Railway on 1-4-1928.
Bermo to Danea*	1-8-1925	33·39			
Danea to Barkakana*	31-3-1926	36·26	88·29		
Barkakana to Barwadih	1-2-1929	154·40			
Barwadih to Daltonganj	31-1-1929	28·07	182·47		
Garhwa Road-Nagar Untari	8-1-1962	44·05			
Nagar Untari to Renukoot	15-4-1963	55·49			
Renukoot to Churk	19-10-1963	41·89	141·43		
Calcutta Chord Railway	1-2-1932	†10·93	10·93		†This does not include 3·56 kilometres taken out due to abolition of a link between Calcutta Chord and Main Line on 26 March, 1950.
Dankuni link between Calcutta Chord Railway and Howrah Burdwan Chord.	6-3-1944	1·79	1·79		
Tikiapara-Lillooah avoiding link	11-3-1945	2·59	2·59		
Net decrease on measurement		1·46	1·46	4,021·[illegible]2††	

†† (*i*) Excludes 67·66 kilometres in respect of Bhandaridah—Mari Section.

(*ii*) Difference of 2·61 kilometres is due to the rounding off of the figures in col. 5.

EASTERN RAILWAY SYSTEM—contd.

(i) EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Ex-East Indian Railway Portions—contd.					
Seven Track Line—					
Howrah Station to kilometre 1·43	1-1-1908	1·43	1·43	1·43	
Sextuple Line—					
Howrah Station from kilometres 1·43 to 1·56	1-1-1908	0·13	0·13	0·13	
Quintuple Line—					
Sorting Yard Cabin to kilometre 8·20/2 . .	1-1-1917	6·45	6·45	6·45	
Quadruple Line—					
2nd Up line between kilometres 183·47/1158 and 186·68/2640.	31-3-1948	3·67			
Sealdah to Kakurgachi	18-2-1916	1·28			
Kakurgachi to Dum Dum	1-2-1907	5·04			
Dum Dum to Barrackpore	12-12-1912	16·58			
Barrackpore to Naihati	12-12-1912	13·48			
Increase due to track running on different alignments at several places.	21-11-1912	2·02			
Serampore to Sheoraphuli	26-6-1913	2·53			
Saktigarh to Burdwan	1-1-1917	13·39			
Burdwan to Khana Junction	23-4-1923	11·91			
Borachuk to Sitarampur	11-8-1928	5·46			
Up avoiding line between Kalipahari and Asansol .	19-1-1942	*5·35			*A portion between Kalipahari and Asansol, 3·23 kilometres, has since been converted into quadruple line and 0·66 kilometre has been found excess on remeasurement.
Raneegunge to Asansol	30-9-1930	4·03			
Jn. point of South Behar to Gaya . . .	30-4-1914	3·89			
Up relief line between Khana and Nooniah Block Hut.	20-12-1944	63·12			
Up relief line between Ondal and Nooniah Blockhut	1-1-1945	16·69			
Increase on re-measurement	31-3-1951	0·56	169·00	169·00	
Triple Line—					
Bally to Uttarpara	1-10-1915	1·67			
Uttarpara to Serampore	3-6-1912	8·56			
Sheoraphuli to Baidyabati	18-9-1913	2·41			
Baidyabati to Bhadreswar	17-4-1916	4·20			
Talit to Khana	1-1-1859	1·54			
Panagar to Mankar	10-1-1942	11·43			
Mankar to Paraj	7-8-1942	6·92			
Paraj to Galsi	1-2-1943	5·47			
Rajbandh to Panagar	5-5-1942	6·44			
Durgapur to Rajbandh	1-2-1943	6·84			
Khana to Galsi	17-4-1943	8·80			
Durgapur to Oyaria	9-5-1943	7·76			
Oyaria to Ondal	21-1-1941	6·52			
Ondal to Raneegunge	16-11-1920	6·78			
Raneegunge to Asansol	22-7-1907	7·16			
Asansol to Borachak	13-3-1924	2·29			
Asansol to Barakar	1-7-1927	2·67			†79·81 kilometres of track between Khana and Nooniah Blockhut and between Ondal and Nooniah Blockhut has been shown under quadruple line.
Grand Chord Line to Barakar	25-4-1928	5·18			
Excess on re-measurement	31-3-1951	0·22	†23·05	23·05	

EASTERN RAILWAY SYSTEM—contd.

(i) EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

Progress in Opening—*contd.*

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Ex-East Indian Railway Portions—contd.					
Double Line—					
Naihati to Kanchrapara	20-4-1892	7·37			
Kanchrapara to Ranaghat	12-11-1892	28·26			
Ranaghat to Aranghata	17-8-1897	8·85			
Aranghata to Bogoola	17-9-1927	10·86			
Bogoola to Majdia	3-11-1895	10·70			
	7-11-1898	1·21			
	29-11-1909	0·24			
Majdia to Border Line	7-8-1897	10·96			
Calcutta Chord Railway	1-2-1932	*2·30			*These Sections were taken over as a result of the partition of B.A. Rly. on 15-8-1947.
Portion of Naihati Bandel Section	15-3-1887	1·39			
Kakurgachi to Gobra	1-2-1907	2·58			
High Level Goods Line to Dock	14-6-1919	7·29			
Sealdah to Ballygunge	20-10-1888	5·63			
	19-9-1890	0·58			
Ballygunge to Jadavpur	10-10-1913	2·17			
Jadavpur to Baruipur	23-11-1915	16·67			
Ballygunge to kilometre 11·27/B Dum Dum Chitpur	20-11-1893	6·36			
Level connection a portion	10-12-1913	2·25			
Excess due to remeasurement in 1953-4	..	0·94			
			126·61		
On the Main Line—					
Bhadreswar to Chandernagore	1-2-1858	†4·09			†Excluding triple length.
Chandernagore to Hooghly	1-5-1858	4·91			
Hooghly to Magra	1-10-1858	8·82			
Magra to Pundooah	25-2-1859	14·16			
Pundooah to Saktighar	1-10-1859	†32·78			
Burdwan to Khana	1-1-1859	†0·51			
Galsi to Durgapur	1-6-1870	4·55			
Oyaria to Raneegunge	2-9-1870	2·06			
Raneegunge to Sitarampur	19-12-1870	†1·46			
Sitarampur to Luckeesarai	1-1-1871	200·51			
Luckeesarai to Burhee	22-6-1860	15·80			
Burhee to Barh	22-2-1868	43·45			
Barh to Futwah	11-1-1868	41·63			
Futwah to Dinapore	20-3-1867	31·59			
Dinapore to Bihta	13-8-1868	17·45			
Bihta to Arrah	28-3-1870	21·95			
Arrah to Buxar	13-8-1868	68·61			
Buxar to Dildarnagar	15-4-1882	36·16			
Dildarnagar to Zamania	20-5-1882	13·55			
Zamania to Sakaldiha	20-9-1882	26·02			
Sakaldiha to Mughalsarai	18-8-1882	21·36			
			611.42		
Carried over				738·03	

EASTERN RAILWAY SYSTEM—contd.

(*i*) EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*concld.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward *Ex-East Indian Railway Portions*—concld.				738·03	
On the Branches of the Main Line—					
Naihati Branch	15-3-1887 1-7-1904	7·03			
On the Grand Chord—			7·03		
Sitarampur to Barakar	6-3-1931	*0·89			*Excluding the Triple length.
Barakar to Chunch	15-2-1907	2·61			
Chunch to Mugma	29-9-1905	6·08			
Mugma to Fatka	29-1-1906	5·09			
Fatka to Kaloobathan	16-1-1906	4·17			
Kaloobathan to Chhota Ambona	21-3-1906	9·32			
Chhota Ambona to Pradhankhanta	17-1-1905	5·92			
Pradhankhanta to Dhanbad	20-8-1906 1-7-1906	8·06			
Dhanbad to Tetulmari	10-8-1922	8·43			
Tetulmari to Nichitpur	7-8-1922	4·97			
Nichitpur to Matari	28-9-1918	5·63			
Matari to Gomoh	22-9-1918	9·62			
Gomoh to Hazaribagh Road	26-1-1923	43·05			
Hazaribagh Road to Parasabad	29-4-1924	20·66			
Parasabad to Sarmatand	2-5-1924	9·25			
Sarmatand to Gujhandi	20-11-1922	26·97			
Gujhandi to Gurpa	11-3-1907	21·92			
Gurpa to Tankuppa	17-12-1923	24·16			
Tankuppa to Bandhua	4-1-1924	7·68			
Bandhua to Phalgu Bridge West	8-4-1925	10·27			
Phalgu Bridge doubling between Manpur and Gaya	1-3-1949	1·00			
Phalgu Bridge West to Gaya North Cabin	30-1-1925	1·67			
Gaya to Kastha	30-4-1914	7·93			
Kastha to Rafiganj	6-1-1927	28·97			
Rafiganj to Sone Nagar	16-2-1927	39·38			
Sone Nagar Bank to Upper Sone Bridge	30-3-1927	0·69			
Upper Sone Bridge to Dehri-on-Sone	6-3-1925	4·99			
Dehri-on-Sone to Khurmabad	30-3-1927	36·55			
Khurmabad to Bhabhua Rd.	20-4-1927	27·04			
Bhabhua Rd. to Karmanasa	4-5-1927	20·52			
Karmanasa to Saiyadraja	26-6-1928	15·13			
Saiyadraja to Ganj-Khwaja	4-5-1927	16·11			
Ganj-Khwaja to Mughalsarai	4-5-1914	2·45			
Portion of Mughalsarai—Varanasi Section from kilometre 1·509 to 4·533.	13-7-1959	@3·03			@Taken over from Northern Railway.
Mughalsarai—Allahabad Section from kilometre 674·19 to 678·42.	13-7-1959	@4·23			
On the Branches of the Grand Chord—			444·44		
Dhanbad to Kusunda	22-4-1924	3·67			
Kusunda to Katrasgarh	1-1-1924	7·35			
Katrasgarh to Phularitand	28-2-1923	7·23			
Portion of Jharia Branch	1-1-1904 26-9-1912	0·27 2·34			
Londa to Pathardih—	1-1-1913	0·72			
Between Main line and Grand Chord at Sitarampur.	3-1-1919	2·03			
			23·61		
On the Howrah-Burdwan Chord—					
A point 10 kilometres from Howrah to Saktighar	1-1-1917	72·84	72·84		
Calcutta Chord Railway	15-4-1933	13·00			
Dankuni Link between Calcutta Chord and Howrah-Burdwan Chord Railway.	6-3-1944	1·79			
Tikiapara Lillooah avoiding link	11-3-1945	2·59			†0·38 kilometres found less due to rounding off of figures.
Ondal loop—Ondal to Ikrah	26-12-1960	9·66	17·38		
				†1,313·37	
Total Double Line (East Indian Railway Portion)			9·66		

EASTERN RAILWAY SYSTEM—contd.

(i) EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

DETAILS OF CONSTRUCTIONS

Ex.-E. I. Railway Portion—

Permanent Way—The main line from Howrah to Mughalsarai including all branches is laid with steel rails. Short branches such as Salanpur Branch are still partly laid with iron rails but these are being replaced with second-hand steel rails removed from main and branch lines in the course of relaying.

On the Main Line—Howrah to Mughalsarai, a distance of about 757·19 kilometres, the line is laid with the following rails :—

	Up. Kilometres	Dn. Kilometres
44·11 kilograms/metre (88·1/2 lbs/yard) B.H. steel rails	0·25	Nil
44·61 kilograms/metre (90 lbs/yard) E.I.K. steel rails	Nil	0·50
42·37 kilogɹams/metre (85 lbs/yard) B.H. steel rails	1·04	Nil
44·61 kilomgrams metre (90 lbs/yard)-P.B.S.F.F. steel rails	0·91	0·37
44·61 kilograms/metre (90 lbs/yard) RB S.F.F. steel rails	654·45	548·37
49·85 kilograms/metre (100 lbs/yard) B.S.F.F. steel rails	6·30	Nil
53·20 kilograms/metre (105 lbs/yard) B.S.F.F. steel rails	2·35	4·47
57·32 kilograms/metre (115 lbs/yard) B.S.F.F. steel rails	91·89	203·42

On the Grand Chord—Sitarampur to Mughalsarai a distance of about 457·05 kilometres, the line is laid with the following rails:—

44·61 kilograms/metre (90 lbs/yard) R.B.S.F.F. steel rails	306·00	274·71
53·20 kilograms/metre (105 lbs/yard) B.S.F.F. steel rails	14·00	13·27
57·32 kilograms/metre (115 lbs/pard) B.S.F.F. steel rails	94·05	169·07
65·36 kilograms/metre (132 lbs/yard) B.S.F.F. steel rails	43·00	Nil

The Howrah-Burdwan Chord is laid with 44·61 kilograms/metre (90 lbs/yard) F.F. R.B.S. steel rails for 105·37 kilometres and 57·32 kilograms/metre (115 lbs/yard) F.F.B.S. rails on the rest. (Excepting 6·50 kilometres only on the up line which is laid with 53·20 kilograms/metre (105 lbs/yard) B.S.F.F).

On Sahibganj Loop the rails laid are 44·11 kilograms/metre (88-1/2 lbs/yard) B.H. rails for 111·09 kilometres and 44·61 kilograms/metre (90 lbs/yard) R.B.S. rails for 290 kilometres.

The Bandel-Barharwa Branch is laid with 37·13 kilograms/metre (75 lbs/yard) D.H. steel rails for about 37·00 kilometres, 42·37 kilograms/metre (85 lbs/yard) B.H. steel rails for 1·50 kilometres, 44·11 kilograms/metre (88·1/2 lbs/yard) B.H. rails for 10·00 kilometres, 44·61 kilograms/metre (90 lbs/yard) R.B.S. rails for 191·64 kilometres, 44·61 kilograms/metre (90 lbs/yard) B.S.F.F. rails for 15·72 kilometres, 49·85 kilograms/metre (100 lbs/yard) D.H. rails for 2·19 kilometres and 57·32 kilograms/metre (115 lbs/yard) B.S.F.F. rails for 8·85 kilometres.

The Ondal-Sainthia Chord is laid with 37·13 kilograms/metre (75 lbs/yard) F.F. (E.I.R.) steel rails except 6·06 kilometres with 44·11 kilograms/metre (88-1/2 lbs/yard) B.H. steel rails, 0·80 kilometre with 44·61 kilograms/metre (90 lbs/yard) B.S.F.F. rails, 12·10 kilometres with 44·61 kilograms/metre (90 lbs/yard) R.B.S. F.F. rails; and 9·28 kilometres with 44·61 kilograms/metre (90 lbs/yard) R.B.S.F.F. rails between Ondal-Ukhra (West Line).

The Rajmahal, Chara, Giridih and Mokamehghat Branches are laid with 42·37 kilograms/metre (85 lbs/yard) B.H. rails excepting 1·00 kilometre with 37·13 kilograms/metre (75 lbs/yard) D.H. steel rails on Chara Branch and 5·60 kilometres with 44·61 kilograms/metre (90 lbs/yard) R.B.S.F.F. rails on Giridih Branch. Patna-Gaya Branch is laid with 44·61 kilograms/metre (90 lbs/yard) R.B.S.F.F. raills. Tetulmari Link is laid with 57·32 kilograms/metre (115 lbs/yard) B.S.F. rails for 3·06 kilometres and with 44·61 kilograms/metre (90 lbs/yard) B.S.F.F. for the rest.

Bhagalpur-Mandar Hill Branch is laid with 59·85 kilograms/metre (100 lbs/yard) D.H. rails.

On Barkakana Loop, from Gomoh to Sone-East Bank, a distance of about 410 kilometres, the rails laid are 44·61 kilograms/metre (90 lbs/yard) R.B.S.F.F. for 237·41 kilometres, 44·61 kilograms/metre (90 lbs/yard) B.S.F.F. for 101·67 kilometres, 44·11 kilograms/metre (88-1/2 lbs/yard) B.H. for 43·43 kilometres and 42·37 kilograms/metre (85 lbs/yard) B.H. for 27·87 kilometres.

Naihati Branch is laid with 44·61 kilograms/metre (90 lbs/yard) R.B.S.F.F. rails.

Tarakeswar Branch is laid with 44·61 kilograms/metre (90 lbs/yard) R.B.S.F.F. rails.

Calcutta Chord Railway is laid with 57·32 kilograms/metre (115 lbs/yard) B.S.F.F. steel rails for 7·13 kilometres, 44·61 kilograms/metre (90 lbs/yard) R.B.S.F.F. steel rails for 8·12 kilometres and with 53·20 kilograms/metre (105 lbs/yard) B.S.F.F. for 9·50 kilometres.

Ondal Loop is laid with 37·13 kilograms/metre (75 lbs/yard) D.H. steel rails for 21·12 kilometres, with 42·37 kilograms/metre (85 lbs/yard) B.H. rails for 9·00 kilometres, with 44·11 kilograms/metre (88-1/2 lbs/yard) B.H. rails for 4·63 kilometre.

Dhanbad-Jharia-Pathardihi Section is laid with 49·85 kilograms/metre (100 lbs/yard) B.D.F.F. rails.

Pathardihi Branch is laid with 57·32 kilograms/metre (115 lbs/yard) F.F.B.S. rails except 1·20 kilometre, with 44·11 kilograms/metre (88-1/2 lbs/yard) B.H. rails.

Nichitpur Link is laid with 49·85 kilograms/metre (100 lbs/yard) B.S.F.F. rails.

Azimganj-Naihati Branch is laid with 37·13 kilograms/metre (75 lbs/yard) R.B.S.F. rails.

Deoghar Branch laid with 49·85 kilograms/metre (100 lbs/yard) B.S.F.F. rails excepting 0·80 kilometre with 44·61 kilograms/metre (90 lbs/yard) R.B.S.F.F. rails.

The following branches are laid with 37·13 kilograms/metre (75 lbs/yard) D.H. steel rails:

1. Monghyr Branch.
2. Kasta Branch.
3. Barabani Loop (except 5·62 kilometres with 44·11 kilograms/metre (88-1/2 lbs/yard) B.H., 10·37 kilometres with 49·85 kilograms/metre (100 lbs/yard) D.H. rails and 1·00 kilometre with 57·32 kilograms/metre (115 lbs/yard) B.S.F.F. rails and 0·37 kilometre with 44·61 kilograms/metre (90 lbs/yard) R.B.S. rails.
4. Toposi Barabani Chord except 1·60 kilometres with 44·11 kilograms/metres (88½ lbs/yard) B.H. rails.
5. Katras-Jamuniatand Branch except 24·12 kilometers with 42·37 kilograms/metre (85 lbs/yard) B.H., 9·62 kilometres with 49·85 kilograms/metre (100 lbs/yard) Rails and 5·25 Kilometres with 44·11 kilograms/metre (88½ lbs/yard) B.H. rails.
6. Damuda Branch.
7. Goluckdih Branch except 2·00 kilometers with 42·37 kilograms/metre (85 lbs/yard) B.H. and 1·60 kilometres with 49·85 kilograms/metre (100 lbs/yard) D.H. rails].

DETAILS OF CONSTRUCTION—contd.

Ex-East Indian Railway Portion—contd.

8. Katras-Khanoodih Extension.
9. Jhennagurah Branch [except 0·40 kilometres with 42·37 kilograms/metre (85 lbs/yard) B.H. and 0·20 kilometres with 44·11 kilograms metre (88½ lbs/yard) B.H. rails].
10. Tarighat Branch.
11. South Behar Branch [except 32·62 kilometres with 44·61 kilograms/metre (90 lbs/yard) B.S.F.F. rails], and 29·62 kilometers with 44·61 kilograms/metre (90 lbs/yard) R.B.S.F.F. rails).

Sleepers—At present laid about 8·38 per cent of the sleepers are wooden and remainder mostly iron. The wooden sleepers principally consist of Sal and Deodar. The chairs are cast iron, the iron sleepers are of Denham Olphert pattern, Railway Board and E.I.R. pattern and steel trough sleepers.

Ballast—The main lines are ballasted throughout with stone.

Fencing—The line was fenced throughout except on the Damuda, Ikrah, Salanpur, Chanch, Pandra, Azimganj, Baruni, Daltonganj, Katwa-Barharwa section of Bandel-Barharwa Branch, Deoghar Branch, the Ondal Loop, the Ondal-Sainthia and Dhanbad-Jharia Chords. But the present policy is to remove the fencing except in station yards, in suburbs and industrial areas and in the immediate neighbourhood of level crossings as per Railway Board's letter No. 649-W of 7 September, 1937.

Curves—The sharpest curve on the East Indian Railway is of 8° or 213 metres radius and is situated on the Katrasgarh branch between kilometres 265·64—271·98.

Gradients—The ruling gradient on the main line is 1 in 160 with a 1 in 100 banking section between Simultala and Jhajha and on the Grand Chord, 1 in 200 (compensated on curves), except between Sitarampur and Dhanbad where it is 1 in 181 on the Up and 1 in 80 banking section between Gurpa and Gujhandi. The ruling gradient on the Tarakeswar Branch is 1 in 200, on the Howrah-Burdwan Chord 1 in 400, on the Barkakana Loop viz. from Gomoh to Sone-East-Bank 1 in 100, on the Patna-Gaya and Digha-Ghat Branches 1 in 250, on the Bandel-Barharwa Branch 1 in 200, the Sahibganj Loop 1 in 150, the Monghyr Branch 1 in 200, the Ondal Sainthia Chord 1 in 200, the Azimganj Branch 1 in 80 and on the Deoghar Branch 1 in 50.

Sealdah Division portion of old B. & A. Railway—

Permanent Way—On the main line Sealdah to Banpur, a distance of about 117·48 kilometres, the line is laid with 44·61 kilograms/metre (90 lbs/yard) R.B.S.F.F. rails.

The following branches are laid with 44·61 kilograms/metres (90 lbs/yard) B.S.F.F. and R.B.S.F.F. rails—

1. Calcutta-Naihati (Suburban).
2. Dum Dum Jn.—Bongaon.
3. Ranaghat—Bongaon.
4. Calcutta—Diamond Harbour [excepting 15·00 kilometres with 57·32 kilograms/metre (115 lbs/yard) R.B.S.F.F. rails].
5. Baruipur—Lakshmikantapur.
6. Ballygunge—Budge Budge.
7. Sonarpur—Canning.
8. Kakurgachi Chord [excepting 9·25 kilometres laid with 57·32 kilograms/metre (115 lbs/yard) B.S.F.F. rails and 6·05 kilometres with 43·20 kilograms/metre (105 lbs/yard) B.S.F.F. rails).
9. Ranaghat—Lalgolaghat.
10. Ranaghat—Santipur.
11. Barasat-Hasanabad Section.

Sleepers—Main and Branch lines are mostly laid with wooden and C. I. sleepers excepting Ranaghat-Bongaon, Ranaghat Lalgol and Ranaghat-Santipur branches which are partly laid with steel sleepers.

Ballast—The Main line is ballasted throughout with stone and branches are ballasted with stone, bricks, earth and cinders.

Fencing—The line is fenced except between Baruipur and Diamond Harbour, Piali and Canning, Churni Jn. and Santipur and Ranaghat Jn. to Bongaon Jn. The present policy is to remove the fencing except in the station yards, in suburbs and industrial areas and in the immediate neighbourhood of level crossings as per Railway Board's letter No. 649-W dated 7 September, 1937.

Curves—The sharpest curve is of 305 metres radius.

Gradients—The ruling gradient on the main line is 1 in 300, on the Dum Dum-Bongaon Section 1 in 250, on the Ranaghat-Lalgolaghat, Ranaghat-Bongaon and Baruipur-Lakshmikantapur branch 1 in 200, on Calcutta-Budge Budge Sec. 1 in 300 on the Ranaghat-Santipur branches 1 in 500. There is also a short length of 1 in 200 on the low level approaches to Chitpur from Dum Dum Jn.

STATISTICS OF WORKING

In comparing the fluctuations in the financial results, the following changes in accounting and financial structure of Railways effective during the two years 1952-3 and 1953-4, should be borne in mind—

(a) The earning actually collected by a zonal Railway either in cash or by book adjustment was taken in the accounts as the earning of that Railway and no apportionment of earnings accruing from the traffic interchanged between the Indian Railways was made.

(b) Inter Railway adjustments were not made in respect of the expenditure on manufacture, repair and overhaul of rolling-stock at workshops of one railway on behalf of another (except the independent manufacturing units like Chittaranjan Locomotive Works and the Integral Coach Factory etc.).

(c) No inter-Railway adjustment was made in the financial accounts of freight charges for the carriage of Railway stores, fuel, etc., i.e., so far as the financial accounts are concerned these stores were carried free of charge.

For the purpose of these statistics, the integration of Eastern Railway has been assumed to have taken place on 1 April, 1952 instead of 14 April, 1952.

The figures of gain/loss in the tables of statistics of working do not include the receipts from subsidised companies—Government share of surplus profits, Railway Miscellaneous Receipts, miscellaneous railway expenditure, expenditure on subsidised railways and expenditure relating to open line works.

EASTERN RAILWAY SYSTEM—*contd.*

(i) EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

STATISTICS OF WORKING—*contd.*

Table A—Eastern Railway—All Gauges combined (entire system)

Year	Kilometrage open at the end of each year	Total Capital outlay including suspense to end of each year i.e. outlay on (*i*) lines opened and (*ii*) lines partly or wholly under construction	Gross Earnings	Net Earnings	Percentage of net earnings on total Capital Outlay or Capital-at-charge given in column 3.	Payment to make up Guaranteed interest on the paid up Capital of A.K., B.K., F.I.,K.F., B.D.R. & B.P. Rlys. and rental to S.B. Rlys.	Payment to General Revenues	Gain(+) or Loss(—) to the State pertaining to each year	Earnings per kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	
1952-3 .	9,132·87	2,18,74,63,116	68,99,77,424	9,52,40,461	*	6,57,109	8,80,68,476	*	*	*
1953-4 .	9,154·62	2,18,34,46,290	70,67,13,269	8,30,48,092	*	6,81,152	8,73,23,500	*	*	*
1954-5 .	9,204·63	2,22,36,56,517	76,55,38,137	16,75,85,100	7·54	7,41,219	8,81,42,056	7,87,01,825	1,595	78·11
1955-6§ .	3,734·71	1,34,44,48,440	47,32,33,423	10,41,78,572	7·75	4,78,640	5,15,72,493	5,21,27,439	2,430	77·99
1956-7 .	3,735·97	1,44,94,91,787	47,58,64,469	7,31,19,956	5·04	5,99,500	4,58,34,266	2,66,86,190	2,446	84·63
1957-8 .	3,741·21	1,68,09,00,436	51,50,89,434	7,53,10,352	4·48	3,47,682†	6,06,51,941	1,43,10,729	2,648	85·40
1958-9 .	3,732·53	1,84,36,24,240	54,59,65,283	9,13,66,817	4·96	9,24,914	6,81,13,137	2,23,28,766	2,805	83·27
1959-60 .	3,832·04‡	2,09,24,00,160	60,97,55,065	15,10,84,725	7·22	4,94,670	7,73,76,322	7,32,13,733	3,098	75·22
1960-1 .	3,789·47§§	2,11,44,58,169	65,24,02,000	15,25,14,147	7·21	5,10,973	7,53,38,992	7,66,64,182	3,302	76·62
1961-2 .	3,874·62	2,32,35,51,547	71,03,58,477	17,74,03,916	7·63	6,32,207	10,18,41,741$	7,49,29,968	3,526	75·00
1962-3 .	3,943·21	2,64,88,65,034	82,85,48,949	22,98,55,857	8·68	7,22,000	10,80,19,880$	** 12,11,15,364	4,030	72·26
1963-4 .	4,049·40	2,96,79,93,511	90,16,76,502	23,77,95,011	8·01	9,74,179	13,06,86,192$	** 10,61,73,861	4,259	73·63

NOTE—The figures of capital-at-charge are provisional pending closing of pre-partition accounts and the finalisation of the balances of ex-States railways brought forward on 1st April, 1950.

*These results have not been worked out as the figures of gross earnings and working expenses as booked in individual railways' accounts during the years 1952-3 and 1953-4 did not represent the true systemwise apportioned and adjusted figures as stated above.

**These figures are inclusive of company's share of surplus profits, based on the terms of the contract, amounting to Rs. 1,387 and Rs. 39,221 respectively for the years 1962-63 and 1963-64.

$The figures upto 1960-61 represent only dividend paid to the General Revenues. From 1961-62 to 1963-64 these figures are, however, inclusive of the amount paid to the General Revenues in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 1,59,27,488, Rs. 1,59,92, 219 and Rs. 1,54,29,855 respectively for the years 1961-62, 1962-63 and 1964-65.

†Includes Rs. 869 on account of Govt. share of surplus profit for A.K. Rly.

‡This includes 67·66 kilometres in respect of Bhandaridah—Muri Section which was opened for goods traffic on 10th November, 1959. It is worked by the South Eastern Railway.

§The statistics for 1955-6 onwards indicate figures for the bifurcated Eastern Rly.

§§Revised figures in respect of kilometrage at the end of 1960-1 as shown in Col. (2) above with that appearing in the Railway Board's Administration Report Vol. II for 1960-1 is due to the inclusion of kilometrage of 5·79 in respect of Tildanga-Farakka (running track) opened for goods traffic only during 1960-1.

Table B—Eastern Railway (Broad Gauge—1·676 metres)

Year	Kilometrage open at the end of each year	Total Capital outlay including suspense to end of each year i.e. outlay on (*i*) lines opened and (*ii*) lines partly or wholly under construction	Gross Earnings	Net Earnings	Percentage of net earnings on total Capital Outlay or Capital-at-charge given in column 3	Payment to make up Guaranteed interest on the paid up Capital of A.K., B.K., F.I., K.F., B.D.R. & B.P. Rlys. and rental to S.B. Rlys.	Dividend to General Revenues	Gain(+) or Loss(—) to the State pertaining to each year	Earnings per kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	
1952-3 .	7,616·91	†	†	†	†	†	†	†	†	†
1953-4 .	7,638·67	†	†	†	†	†	†	†	†	†
1954-5 .	7,688·67	2,16,27,20,517*	75,54,82,593	17,62,12,271	8·14	7,41,219	8,57,07,316	8,97,63,736	1,884	76·67
	Figures for 1955-6 onwards included under Eastern Railway entire system.									

NOTE—The figures of capital-at-charge are provisional pending closing of pre-partition accounts and the finalization of the balances of the ex-State railways brought forward on 1 April, 1950.

*Includes Rs. 15,80,00,000 for Bengal Assam Rly. for which gauge-wise details are not available.

†Included under Table 'A' above as separate gauge-wise figures were not recorded.

EASTERN RAILWAY SYSTEM—concld.

(*ii*) EASTERN RAILWAY (NARROW GAUGE—0·762 METRE)

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Ex-East Indian Railway Portion (0·762 *metre gauge*)					
Santipur—Nabadwipghat Branch . . .	5-4-1899	27·58	27·58	27·58	—
Total open kilometrage (Eastern Railway 0.762 metre gauge)				27·58	

DETAILS OF CONSTRUCTION

Ex-East Indian Railway portion (Narrow Gauge—0·762 metre)

Santipur—Nabadwipghat Section—

Permanent Way—The line is laid with 20·46 kilograms/metre ($41\frac{1}{4}$ lbs/yard) F.F. rails for 22·54 kilometres and 24·80 kilograms/metre (50 lbs/yard) F.F. rails for 5·04 kilometres on wooden sleepers.

Ballast—The line is ballasted with bricks, stone, cinders and earth.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 116 metres radius.

Gradients—The ruling gradient is 1 in 500 on the Santipur-Krishnagar Section, and 1 in 100 on the Krishnagar-Nabadwipghat Section.

CONTRACT AND RATES AND FARES—As noted under Eastern Railway-Broad gauge.

STATISTICS OF WORKING

Table C—Eastern Railway (Narrow Gauge—0·762 metre)

Year 1	Kilometrage open at the end of each year 2	Total Capital outlay including suspense to end of each year *i.e.* outlay on (*i*) lines opened and (*ii*) lines partly or wholly under construction 3	Gross Earnings 4	Net Earnings 5	Percentage of net earnings on total Capital Outlay or Capital at-charge given in column 3. 6	Payment to make up Guaranteed interest on the paid up Capital of A.K., B.K., F.I., K.F., B.D.R. & B.P. Rlys. and rental to S.B. Rlys. 7	Dividend to General Revenues 8	Gain (+) or loss(—) to the State pertaining to each year 9	Earnings per kilometre per week 10	Proportion of expenses to earnings 11
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	
1952-3 .	1,515·95	†	†	†	†	†	†	†	†	†
1953-4 .	1,515·95	†	†	†	†	†	†	†	†	†
1954-5 .	1,515·95	6,09,36,000	1,00,55,544	—86,27,171	—14·15	†	24,34,740	—1,10,61,911	127	185·81
(The statistics for 1955-6 onwards indicate figures for the bifurcated Eastern Rly.)										
1955-6 .	27·58	†	1,71,423	—43,479	†	†	†	—43,479	119	125·73
1956-7 .	27·58	†	1,55,915	—40,007	†	†	†	—40,007	108	125·64
1957-8 .	27·58	†	1,40,914	—28,131	†	†	†	—28,131	98	119·96
1958-59 .	27·58	†	1,31,252	—1,37,795	†	†	†	—1,37,795	91	204·99
1959-60 .	27·58	†	1,24,358	—1,52,667	†	†	†	—1,52,667	86	222·76
1960-61 .	27·58	†	1,37,391	—1,95,373	†	†	†	—1,95,373	96	242·20
1961-62 .	28·58	†	1,49,306	—2,46,209	†	†	†	—2,46,209	104	264·90
1962-63 .	27·58	†	1,37,150	—2,39,798	†	†	†	—2,39,798	95	274·84
1963-64 .	27·58	†	1,39,433	—2,62,919	†	†	†	—2,62,919	97	288·56

†Included in table 'A' under (broad gauge—1·676 metres) as separate gauge-wise figures were not recorded.

CHAPTER IV
NORTHERN RAILWAY SYSTEM

HEAD QUARTERS—New Delhi.

PRESENT SYSTEM—The Northern Railway was formed on 14 April 1952 by amalgamating the following lines into a single unified system:—

(a) The entire Eastern Punjab Railway (broad gauge—1·676 metres & narrow gauge—0·762 metre).

(b) The Jodhpur Railway (excepting Marwar-Phulad Section)—(metre gauge—1·000 metre).

(c) The entire Bikaner Railway (metre gauge—1·000 metre).

(d) The Lucknow, Moradabad and Allahabad Divisions of the East Indian Railway (broad gauge—1·676 metres and metre gauge 1·000 metre)

(e) The Delhi-Rewari-Fazilka Section (from the midnight of 10/11 May 1952, prior to which it was worked by the Western Railway) (metre gauge—1·000 metre).

Administrative set up—The Northern Railway Administration is headed by the General Manager who is assisted by the Senior Deputy General Manager and other Heads of Departments, viz., Chief Operating Superintendent, Chief Commercial Superintendent, Chief Engineer (Open Line), Chief Engineer (Construction I) at Chopan, Chief Engineer (Construction II) at headquarters, Chief Mechanical Engineer, Controller of Stores, Chief Signal and Tele-communication Engineer, Chief Personnel Officer, Chief Medical Officer , Chief Security Officer and Chief Public Relations Officer. There are seven Divisions, at Allahabad, Bikaner, Delhi, Ferozepur, Jodhpur, Lucknow and Moradabad each under a Divisional Superintendent who is, in effect, the area General Manager.

HISTORY

The changes in the kilometrage of three constituent railways included in the Northern Railway are referred to below:—

(a) *Eastern Punjab Railway*—The Eastern Punjab Railway came into existence as a separate railway on 15th August 1947. On the partition of India, the North Western Railway was divided, and the portions of the Railway falling within the Indian Dominion were reorganized into the Eastern Punjab Railway. The North Western Railway came into existence in 1886 as the result of a merger of five separate administrations, when the old Sind, Punjab and Delhi Guaranteed Company was taken over by the State from 1 January 1886 and amalgamated with the Punjab Northern, the Indus Valley, the Eastern section of Sind-Sagar and the Southern section of Sind Pishin State Railways and worked as one undertaking under the name of North Western Railway. The old Sind, Punjab and Delhi Guaranteed Railway Company was registered in 1855.

Several sections constituting the Eastern Punjab Railway System were the result of absorption etc. in the past. The Delhi-Ambala-Kalka Railway Company formed in January 1889, later worked and maintained by the East Indian Railway Company was acquired by the State on 1st April 1926. The Kalka-Simla Railway, also constructed by the Delhi-Ambala-Kalka Railway Company during 1898 to 1903, was acquired by the State on 1st January 1906, but the Company continued to work it under the direct orders of the Railway Board till 1st January 1907, on which date it was made over to the North Western Railway. On the acquisition by State of the East Indian Railway, on 1st April 1925, the Delhi-Ghaziabad section and the working agency of the Delhi-Ambala-Kalka Railway, were also transferred to the North Western Railway. Further, the Amritsar Patti Kasur and the Hoshiarpur Doab Branch Railways owned by private companies bearing the respective names but already worked by North Western Railway, were purchased by State on 1st January 1936 and 1st April 1946 respectively, and became integral parts of the North Western Railway. With the Federal Financial Integration of the States, the Jind Panipat Railway, the Sirhind Rupar Railway, the Rajpura Bhatinda Railway and the Ludhiana Dhuri Jakhal Railway, belonging to Patiala and Eastern Punjab States Union also came to vest in the Government of India on 13 April 1950.

(b) *Jodhpur Railway*—The original proposal to construct a State-owned Railway in Jodhpur State was made in 1879 as a result of the construction of the Rajputana Malwa Railway. The Jodhpur Durbar took advantage of this opportunity to develop the State by connecting Jodhpur with this line and through it with other important points in India. The Jodhpur Railway started its construction in 1881 and the line was opened through to British India in 1900. Under an agreement with the Bikaner State, the Jodhpur Railway constructed the railway line from the border of the Jodhpur State to Bikaner, the line being opened on 9th December 1891. This line as well as other sections of the railway in Bikaner and adjoining States and Provinces, which were subsequently constructed, were worked by a joint administration, and the Railway system was renamed the Jodhpur-Bikaner Railway in 1891.

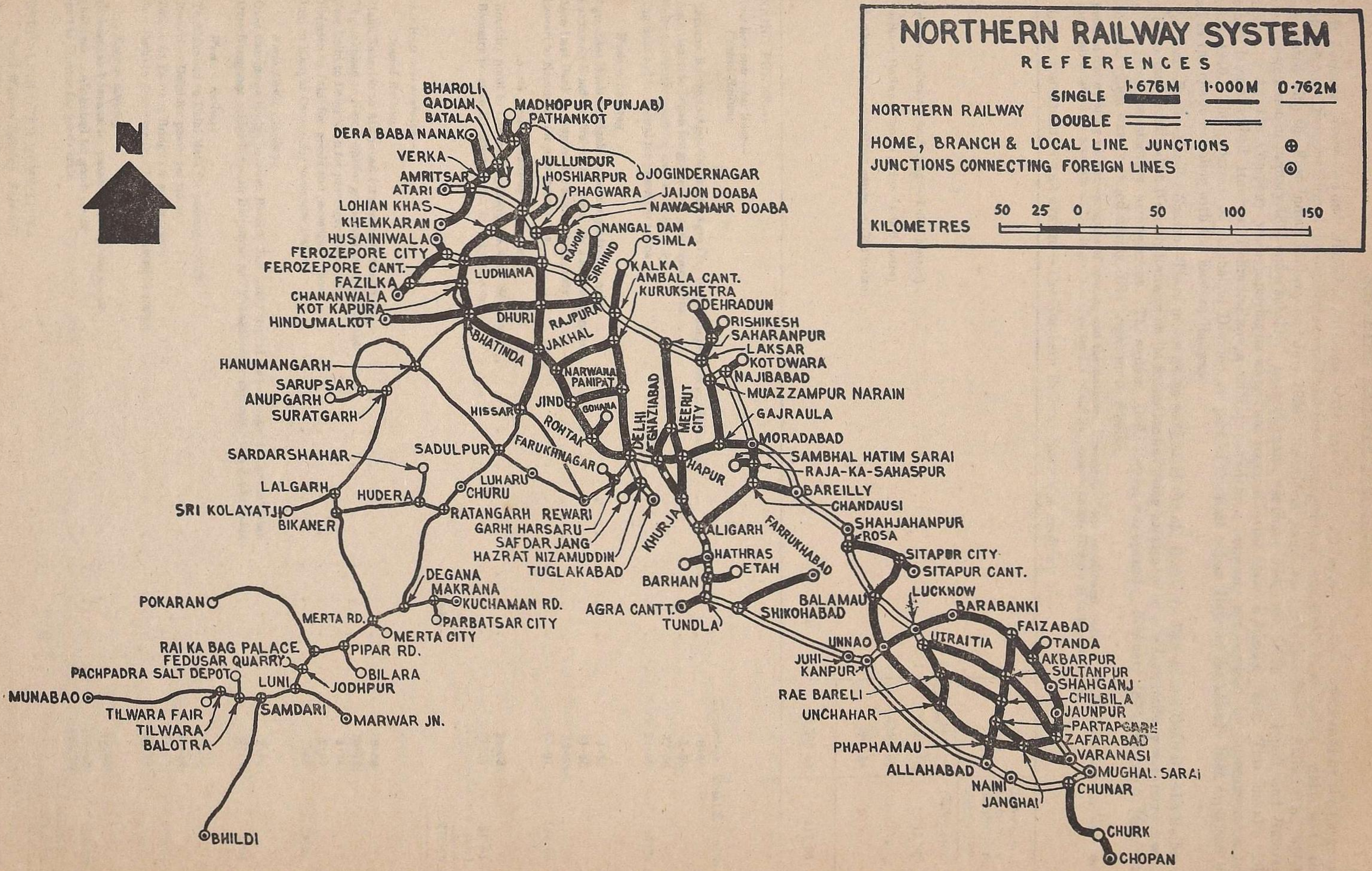
The Jodhpur-Bikaner Railway constructed railway lines in the Sind on the Western border of Jodhpur State, and worked these on behalf of the Government of India. The Joint Administration also constructed and worked on behalf of the Sind Light Railways Co., Ltd., the branch lines from Mirpur Khas to Jhudo and from Mirpur Khas to Khadro. These lines were later purchased by the Government of India on 1st January 1929 and 1st January 1943 respectively, and continued to be worked by the Jodhpur Railway.

The Joint working arrangement was terminated on 1st November 1924 and the Jodhpur Railway commenced working as an independent system. On 1st August 1948, the Sind section of the Jodhpur Hyderabad Railway which had fallen in Pakistan on the partition of India was handed over to the Government of Pakistan. In April 1949, the control and ownership of the Railway passed to the Government of the United State of Rajasthan with the integration into it of the Jodhpur State. Subsequently, on the implementation of the Federal Financial Integration on 1st April 1950, the Railway came to vest in the Government of India and was thus brought directly under the ownership and control of the Government of India.

The Marwar-Phulad Section was made over to the Western Railway on its formation.

(c) *Bikaner State Railway*—The Bikaner State Railway was originally worked as part of a combined Jodhpur-Bikaner system, comprising the Jodhpur-Bikaner and Jodhpur-Hyderabad sections. The earliest line from Bhagu to Bikaner was sanctioned in 1890 and opened through to Bhatinda in 1902. The Railway was worked under contracts between the Government of India and the Jodhpur and Bikaner Durbars for the construction and working of the lines. On 1st November 1924, the Bikaner section was taken over by the Bikaner Durbar for direct management. The Bikaner Railway also worked the Nabha section of the Sadulpur Rewari line, which was owned by the Nabha State.

When the Union of Rajasthan was formed, Bikaner became part of the new State and the railway its property. With effect from 1st April 1950, when the Federal Financial Integration was effected, the railway came to vest in the Government of India and was brought under its direct control and management.


NORTHERN RAILWAY SYSTEM
REFERENCES
NORTHERN RAILWAY
SINGLE
DOUBLE
1·676M
1·000M
0·762M
HOME, BRANCH & LOCAL LINE JUNCTIONS
JUNCTIONS CONNECTING FOREIGN LINES
KILOMETRES
50 25 0 50 100 150
N
BHAROLI
QADIAN
BATALA
MADHOPUR (PUNJAB)
PATHANKOT
DERA BABA NANAK
VERKA
AMRITSAR
ATARI
JULLUNDUR
HOSHIARPUR
JOGINDERNAGAR
PHAGWARA
JAIJON DOABA
NAWASHAHR DOABA
LOHIAN KHAS
KHEMKARAN
HUSAINIWALA
FEROZEPORE CITY
FEROZEPORE CANT.
FAZILKA
CHANANWALA
KOT KAPURA
HINDUMALKOT
RAHON
NANGAL DAM
SIMLA
SIRHIND
KALKA
AMBALA CANT.
KURUKSHETRA
LUDHIANA
DHURI
RAJPURA
BHATINDA
JAKHAL
DEHRADUN
RISHIKESH
SAHARANPUR
LAKSAR
KOTDWARA
NAJIBABAD
MUAZZAMPUR NARAIN
GAJRAULA
HANUMANGARH
SARUPSAR
ANUPGARH
SURATGARH
NARWANA
PANIPAT
JIND
GOHANA
HISSAR
ROHTAK
DELHI
GHAZIABAD
MEERUT CITY
MORADABAD
SAMBHAL HATIM SARAI
RAJA-KA-SAHASPUR
BAREILLY
CHANDAUSI
SARDARSHAHAR
SADULPUR
FARUKHNAGAR
HAPUR
LALGARH
HUDERA
LUHARU
CHURU
SRI KOLAYATJI
BIKANER
RATANGARH
REWARI
GARHI HARSARU
SAFDAR JANG
HAZRAT NIZAMUDDIN
TUGLAKABAD
KHURJA
ALIGARH
FARRUKHABAD
SHAHJAHANPUR
ROSA
SITAPUR CITY
SITAPUR CANT.
HATHRAS
ETAH
BARHAN
DEGANA
MAKRANA
KUCHAMAN RD.
PARBATSAR CITY
POKARAN
MERTA RD.
MERTA CITY
AGRA CANTT.
TUNDLA
SHIKOHABAD
BALAMAU
LUCKNOW
BARABANKI
FAIZABAD
TANDA
UTRAITIA
AKBARPUR
SULTANPUR
SHAHGANJ
CHILBILA
JAUNPUR
PARTAPGARH
ZAFARABAD
VARANASI
MUGHAL SARAI
CHUNAR
UNNAO
JUHI
KANPUR
RAE BARELI
UNCHAHAR
PHAPHAMAU
ALLAHABAD
NAINI
JANGHAI
RAI KA BAG PALACE
FEDUSAR QUARRY
PIPAR RD.
BILARA
JODHPUR
PACHPADRA SALT DEPOT
LUNI
MUNABAO
TILWARA FAIR
TILWARA
BALOTRA
SAMDARI
MARWAR JN.
BHILDI
CHURK
CHOPAN

NORTHERN RAILWAY SYSTEM—contd.

(*d*) *Lucknow Moradabad and Allahabad Divisions of the East Indian Railway*—The line represented by the Lucknow and Moradabad Divisions formed the old State-owned and State-managed Oudh and Rohilkhand Railway, which was later amalgamated with the East Indian Railway on 1 July 1925. Its original name was the Indian Branch Railway Co., which started construction in January 1864 under subsidy. Later the name was changed into the Oudh and Rohilkhand Railway Company. As the Company was not paying its way, it was acquired by the State on January 1889. This line also took over and later absorbed Hardwar Dehra Railway, a railway owned by a Company but acquired by Government on 1st January 1940. The progress of Allahabad Division as part of the East Indian Railway has already been explained in detail in the chapter dealing with the Eastern Railway

(*e*) *Delhi-Rewari-Fazilka Section*—These metre gauge sections of the old Bombay, Baroda and Central India Railway were temporarily retained in Western Railway on its formation but being contiguous to Northern Railway were merged with it as the most satisfactory arrangement. The section Delhi-Rewari was opened in February 1873, Rewari to Hissar in March 1883 which was extended during 1884 right up to Fazilka.

Detailed history along with the progress of opening and the statistics of working of the constituent units of the Northern Railway, upto the date each unit retained its separate entity, is given in Chapter III of the Supplement to the History of Indian Railways.

LINES COMPRISED IN THE SYSTEM—The Northern Railway System is made up of—

	Open line	Under construction or sanctioned for construction
	(Kilometres)	(Kilometres)
(*i*) Northern Railway (broad gauge—1·676 metres)	6,807·44	217·33
(*ii*) Northern Railway (metre gauge—1·000 metre)	3,297·65	..
(*iii*) Northern Railway (narrow gauge—0·762 metre)	260·44	..
Total	10,365·53	217·33

RUNNING POWER—

	Kilometres	Total Kilometres
Home line over other lines—		
Central Railway		
(*a*) Yamuna Bridge to Agra Cantt. via Agra City for passenger and goods trains	6·84	
(*b*) Agra Cantt. to Idgah for goods and passenger trains	1·58	
(*c*) Naini to Shankargarh for ballast trains only	37·56	
(*d*) Tughlakabad to Palwal for passenger trains	39·40	85·38
Western Railway		
(*a*) Agra East Bank to Idgah for passenger trains only	4·88	
(*b*) Kuchaman Road to Phulera for passenger and goods trains	31·45	
(*c*) Agra East Bank to Rupbas for ballast trains only	52·38	
(*d*) Rewari to Nizampur for passenger trains	65·97	154·68
North Western Railway (Pakistan)		
(*i*) Boundry point to Lahore for passenger and goods trains	24·08	
(*ii*) Boundry point to Khokhrapar for mixed trains only	7·56 (Six months in a year)	31·64
Total		271·70
Other lines over home line—		
Central Railway		
(*a*) Naini Junction to Allahabad for passenger trains only	8·56	
(*b*) Tughlakabad to New Delhi for goods and passenger trains	19·12	
(*c*) New Delhi to Delhi Main for passenger trains only	3·14	
(*d*) Bhimsen to Juhi for goods and passenger trains	2·07	
(*e*) Juhi to Kanpur Central for passenger trains	2·45	35 34
North Eastern Railway		
(*a*) Over Ramganga bridge between Bareilly and Basharatganj for passenger and goods trains	0·85	
(*b*) Over Ramganga bridge between Dalpatpur and Moradabad for passenger and goods trains	0·79	1·64
Western Railway		
(*a*) Tughlakabad to Delhi Main for passenger trains	22·16	
(*b*) Rewari to Delhi for passenger trains	82·48	
(*c*) Tundla to Yamuna Bridge for goods trains	22·17	574 04
(*d*) New Delhi to Amritsar (via DUK) for passanger trains	447·23	
Eastern Railway		
Mughalsarai to Varanasi for passenger and goods trains	15·08	
Mughalsarai to Allahabad for goods trains	150·40	268·23
Chopan to Chunar for goods train	102·75	
Total		879·25
FOREIGN LINE OVER HOME LINE—		
North Western Railway (Pakistan)		
(*i*) Boundary point to Munabao for mixed trains only	2·30	2·30
(*ii*) The total of other lines over home line (including foreign line over home line)		881·55

NORTHERN RAILWAY SYSTEM—contd.

(i) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Commercial Section (Main Lines)— *Delhi-Atari—* *E.P. Rly. Portion*					
Delhi-Ghaziabad (*a*)	1-8-1864	21·58			(*a*) Transferred from E. I. Railway on 1-4-1925.
Ghaziabad-Meerut City	18-4-1867	47·06			
Meerut City-Ambala Cantt.	1-1-1869	195·82			
Ambala Cantt.-Ludhiana	12-10-1869	113·01			
Ludhiana-Phillaur	14-10-1870	13·32			
Phillaur-Jullundur Cantt.	1-4-1870	38·83			
Jullundur Cantt. Beas	15-11-1869	40·76			
Beas-Amritsar	1-11-1867	42·21			
Amritsar-Atari	10-4-1862	27·50			
Atari to Boundary line	10-4-1862	1·32	541·41		
Hussainiwala-Bhatinda—					
Boundary Line—Hussainiwala	{ 15-12-1883 8-5-1887	4·46			
Hussainiwala-Ferozepore City	1-10-1892	4·02			
Ferozepore City-Ferozepore Cantt	1-10-1888	3·05			
Ferozepore Cantt.-Bhatinda	15-6-1899	86·24	97·77		
Hindumal Kot-Bhatinda-Delhi—					
Hindumal Kot-Delhi Kishanganj	10-11-1897	395·16			
Delhi Kishanganj-Delhi Brewery Cabin	1-1-1912 1-7-1912	} 1·28			
Delhi Brewery Cabin-Delhi Junction*	20-12-1909	2·11	398·55		*Purchased by the State on 1 January, 1930.
Delhi-Ambala-Kalka†	1-3-1891	266·88	266·88		†Purchased by the State on 1 April, 1926.
Delhi-Hazrat Nizamuddin-Kilokri‡	15-11-1904	12·53			‡Transferred from G. I. P. Railway on 1 March, 1926.
Kilokri-Tughalakabad@	15-11-1904	9·44	21·97		@Double line Section from Hazrat Nizammuddin to Tughlakabad taken over from Central Rly.
Ghaziabad-Moradabad (in yard)		0·90	0·90		
Ghaziabad-Howrah (in yard)		0·80	0·80		
Meerut City-E.I. Railway Line		0·93	0·93		
Khanalampura-Hinden Cabin§		3·43	3·43		§Transferred from E. I. Railway on 12 July, 1940.
Khanalampura-Saharanpur		3·06	3·06		
Junction arrangement at Jakhal		1·13	1·13		
Junction arrangement at Dhuri		1·37	1·37		
Commercial Section (Branch Lines)— *Ludhiana Extension—*					
Ludhiana-Ferozepore Cantt.‖	10-6-1905	123·92	123·92		‖For goods traffic. Opened for Passenger traffic on 1 October, 1905.
Ferozepore City-Fazilka§§	10-2-1906	84·62	84·62		§§Ferozepur Fazilka Boundary line originally laid on 10-2-1906 is dismantled being out of use.
Jullundur Doab Extension—					
Jullundur City-Kapurthala¶	23-6-1912	20·47			¶For goods traffic. Opened for passenger traffic on 1 January, 1913.
Kapurthala-Sultanpur Lodi¶	26-8-1912	24·99			
Sultanpur Lodi-Lohian Khas	1-1-1913	7·21			
Lohian Khas-Gidarpindi	10-1-1914	7·07			
Gidarpindi-Makhu**	14-4-1914	16·09			**For Goods traffic. Opened for passenger traffic on 1 May, 1914.
Makhu-Ferozepore Cantt.	11-8-1913	41·62	117·45		
Phillaur-Lohian Khas	1-6-1913	64·36	64·36		
Jullundur City-Nakodar††	30-5-1914	31·90	31·90		††For goods traffic. Opened for passenger traffic on 15 June, 1914.
Jakhal-Hissar	1-11-1913	81·14	81·14		
Carried over				1,841·59	

NORTHERN RAILWAY SYSTEM—contd.

(i) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—contd.

PROGRESS IN OPENING—contd.

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward	..			1,841 59	
Narwana-Kurukshetra—					
Narwana-Kaithal‡‡	1-2-1899	37·92			‡‡For goods traffic. Opened for passenger traffic on 8 March, 1899.
Kaithal-Kurukshetra	1-12-1910	47·90	85·82		
Jind Panipat—					
Jind Junction-Jind City	7-8-1916	4·57			
Kilometre 46·32—Panipat	1-11-1916	23·77	28·34		
Rohtak-Gohana§§	31-10-1958	31·82	31·82		§§Track Rohtak Panipat was dismantled on 27-6-1942 and portion of that viz Rohtak-Gohana was opened for goods traffic on 31-10-1958 and for passenger traffic on 29-12-1958.
Jullundur Cantonment-Hoshiarpur	16-6-1913	38·22	38·22		
Amritsar-Khem Karan—					
Amritsar to Tarn Taran	21-9-1906	24·14			
Tarn Taran-Patti	30-12-1906	19·39			
Patti-Khem Karan	4-4-1910	33·36	76 89		
Khem Karan—Boundary Line*	4-4-1910	0·47	0·47		*2·83 kilometres track towards boundary line dismantled being out of use.
Amritsar-Pathankot—					
Amritsar-Dina Nagar	1-1-1884	82·14			
Dina Nagar-Pathankot	8-6-1884	24·91	107·05		
Pathankot-Madhopur	11-11-1955	12·25	12·25		
Batala-Qadian	20-12-1928	19·44	19·44		
Verka-Dera Baba Nanak	4-5-1927	45·03			
Dera Baba Nanak—Boundary Line	6-5-1929	3·38	48·41		
Nizamuddin-Safdarjang	1-1-1955	7·47	7·47		
Jullundur-Pathankot Railway—					
Jullundur City to Tanda Urmar	1-1-1915	41·11			
Tanda Urmar to Dasuya	1-2-1915	15·21			
Dasuya to Mukerian	1-3-1915	16·23			
Mukerian to Pathankot (strategic)	7-4-1952	41·47	114·02		
Phagwara-Rahon—					
Main Line—					
Phagwara to Kariah	1-4-1915	29·83			
Kariah to Rahon	27-5-1915	12·79	42·62		
Jaijon Extension—					
Nawanshahr to Jaijon	3-5-1917	31·46	31·46		
From kilometre 4·57 to 46·32 between Jind City and Madlanda	1-11-1916	41·75	41·75		
Ludhiana to Jakhal via Dhuri	10-4-1901	126·46	126·46		
Rajpura to Patiala	1-11-1884	25·75			
Patiala to Bhatinda	13-10-1889	147·71	173·46		
Sirhind to Rupar	26-2-1928	49·83	49·83		
Rupar to Nangal Dam	9-10-1948	56·05	56·05		
Carried over				2,933·42	

NORTHERN RAILWAY SYSTEM—*contd.*

(i) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward	..			2,933·42	@ 4·38 kilometres double line track transferred to Eastern Railway.
Ex-E. I. Rly. Portion—					
Mughalsarai to Mirzapur@	1-1-1864	58·84			The avoiding line from Bechupur to Jeonathpur 0·92 kilometres was opened for traffic on 24-3-1958 dismantled on 30-9-1959.
Mirzapur to South Bank, Jumna	4-4-1864	85·21			
Yamuna Bridge to Allahabad	15-8-1865	4·43			
Allahabad to Kanpur	3-3-1859	192·27			
Kanpur to Etawah	1-7-1861	139·14			
Etawah to Shikohabad	13-11-1861	55·35			
Shikohabad to Tundla Junction	1-4-1862	36·89			
Tundla Junction to Aligarh	1-3-1863	78·15			
Aligarh to Chola (Bulandshahr Road)	1-4-1864	57·20			
Chola to Ghaziabad	1-8-1864	46·90	754·38		
Barhan to Awargarh‡	25-3-1958	37·54			
Awargarh-Etah	1-12-1958	21·88	59·42		‡Barhan Etah Rail link opened for passenger traffic on 19-1-1959.
Allahabad Fort branch—	3-3-1859	3·44	3·44		
Realignment of track near Chaudari Cabin and providing transition to curves.	15-10-1938	0·13	0·13		
Kanpur City branch	15-2-1879	1·42	1·42		
Chunar to Churk branch	12-7-1954	80·93	80·93		
Shikohabad Farukhabad branch—					
Shikohabad to Mainpuri	1-3-1905	47·82			
Mainpuri to Bhongaon	17-8-1905	13·89			
Bhongaon to Farukhabad	1-1-1906	44·21	105·92		
Agra branch—					
Tundla Junction to Yamuna bridge	1-4-1862	20·15			
Yamuna bridge to Agra City (Agra direct access)	1-1-1908	1·54	21·69		
Hathras branch—					
Hathras Junction to Hathras Kilah	1-11-1898	9·53	9·53		
Hapur branch—					
Khurja to Bulandshahr	7-2-1907	22·53			
Bulandshahr to Hapur	15-4-1907	40·01	62·54		
Main line—					
Mughalsarai to 6·41 kilometres	22-12-1862	2·86			
Kilometres 6·41 south of the Dufferin bridge to Kashi (Banaras Ganges) Station.	1-10-1887	6·84			
Kashi (Banaras Ganga) station to Banaras Cantonment	18-6-1883	2·41			
Banaras Cantonment to Rae-Bareli	4-4-1898	223·34			
Rae-Bareli to Lucknow	15-10-1893	78·34			
Lucknow to Sandila	1-2-1872	48·67			
Sandila to Hardoi	15-7-1872	53·11			
Hardoi to Shahjahanpur	1-3-1873	62·76			
Shahjahanpur to Pitambarpur	8-9-1873	51·50			
Pitambarpur to Bareilly	1-11-1874	20·92			†Of this, 0·78 kilometre over the Ramganga bridge (Moradabad) is of mixed gauge (broad gauge—1·676 metres and metre gauge—1·000 metre).
Bareilly to Moradabad (chord line *via* Rampur)	8-6-1894	†90·23			
Moradabad to Nagina	8-10-1884	76·04			
Nagina to Najibabad	1-4-1885	22·11			
Najibabad to Hindan, cabin	1-1-1886	88·51	827·64		
Carried over				4,860·51	

NORTHERN RAILWAY SYSTEM—contd.

(i) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—contd.

PROGRESS IN OPENING—contd.

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward	..			4,860·51	
Banaras Lucknow loop—					
Banaras Cantonment to Shahganj	5-1-1874	90·18			
Shahganj to Bilwai	1-5-1874	11·27			
Bilwai to Malipur	18-4-1874	14·48			
Malipur to Akbarpur	2-3-1874	19·31			
Akbarpur to Faizabad	10-6-1873	61·54			
Faizabad to Bara Banki	25-11-1872	99·73			
Bara Banki to Lucknow Block hut	1-4-1872	23·23	319·74		
Lucknow Sultanpur Zafarabad branch—					
Utratia to Sultanpur	4-6-1955	127·49	219·61 (a)		(a) The branch was taken up during World War II. The Section, Sultanpur to Zafarabad was restored on 27-11-1954 and the rest was open on 4-6-1955.
Sultanpur to Zafarabad	27-11-1954	92·12			
Unao-Madhoganj branch (b)	5-9-1954	77·06	77·06		(b) Unao Madhoganj Branch was taken up during World war II and restored on the date now shown.
Bareilly-Moradabad loop—					
Bareilly to kilometre 8·05	22-12-1873	8·06†			†Of this, 1·88 kilometres over Ramganga bridge (Bareilly) are of mixed gauge (broad gauge—1·676 metres and metre gauge—1·000 metre).
Kilometre 8·05 to Aonla	1-11-1873	17·70			
Aonla to Chandausi	10-6-1873	43·45			
Chandausi to Moradabad	28-10-1872	43·80	113·01		
Branches on the main line—					
Kanpur branch—					
Lucknow to left bank of Kanpur Ganga	23-4-1867	65·62			
Left bank of the Ganga to junction with the old East India Railway at Kanpur	15-7-1875	5·19	70·81		
Balamau-Madhoganj branch—					
Balamau to Madhoganj	1-7-1953	22·82	(c)22·82		(c) The Section, Balamau to Madhoganj was originally opened on 20-12-1903 and was taken up during World War II and restored on the date now shown.
Madhoganj-Auhadpur extension—					
Madhoganj to Bilgram	15-11-1909	12·27	(d) 27·44		(d) The Section, Madhoganj Auhadpur has been taken up and therefore, the route length, 27·44 kilometres, has not been included in the grand total shown in column 5.
Bilgram to Auhadpur	9-3-1910	15·17			
Carried over				5,683·56	

NORTHERN RAILWAY SYSTEM—contd.

(i) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward	..			5,683 56	
Balamau-Sitapur branch—					
Balamau to Misrikh	9-3-1910	36·12			
Misrikh to Sitapur	5-4-1910	23·05			
Chandpur-Bijnor-Muazzampur Narain Branch	5-1-1930	34 49			
Chandpur-Siau Bijnor**	10-11-1952				
Bijnor-Muazzampur Narain	5-1-1930	24·39	118·05		**The Section, Chandpur to Bijnor was taken up during World War II and restored on the date now shown.
Rosa-Sitapur branch—					
Rosa to Sitapur City	18-6-1910	79 21			
Sitapur City to Sitapur Cantonment	2-2-1911 6-4-1914	4·28 1·24	84 73		
Moradabad-Ghaziabad branch—					
Moradabad to Gajroula	1-4-1900	53·75			
Gajroula to Ghaziabad	25-11-1900	85 65	139·40		
Hapur-Meerut branch—					
Hapur to Meerut	7-11-1904	28·82	28·82		
Kotdwara branch—					
Najibabad Junction to the right bank of the Koh river opposite Kotdwara.	21-12-1896	24·44	24·44		
Hardwar branch—					
Lhaksar Junction to the left bank of the Ganga Canal near Jawalapur.	1-1-1886	21·77			
Left bank of the Ganga Canal near Jawalapur to Hardwar.	20-8-1886	5·68			
One track line between Aithal and Pathan	April 1940	0·21	27·66		The portion of Barabanki to Bahramghat was taken up on 29-2-1943.
Hardwar-Dehra Dun branch—					
Hardwar to Dehra Dun	1-3-1900	51·56	51·56		
Rishikesh branch—					
Raiwala to Rishikesh	2-4-1927	11·52	11·52		
Branches on Banaras-Lucknow loop—					
Allahabad-Fyzabad branch—					
Fyzabad to Sultanpur	1-2-1904	57·14			
Sultanpur to Siwait*	1-7-1903	75·72*			*Excluding 3·94 kilometres between Partabgarh and Chilbila, which is a part of the main line.
Siwait to Phaphamau	20-1-1904	5·26			
Phaphamau to Allahabad	1-1-1905	11·26			
Carried over			149·38	6,319·12	

NORTHERN RAILWAY SYSTEM—contd.

(i) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward	..			6,319·12	
Allahabad-Jaunpur branch—					
Phaphamau to Mariahu	18-6-1906	76·46			
Mariahu to Zafarabad	1-1-1907	17·17			
Branches on the Bareilly Moradabad loop—			93·63		
Aligarh branch—					
Chandausi to Rajghat Narora	28-10-1872	49·06			
Rajghat Narora to Aligarh	1-2-1872	48·47			
Allahabad-Rae Bareli-Kanpur branch—			97·53		
Phaphamau to Rae Bareli	2-11-1911	108·79			
Unchahar to Unnao	1-2-1912	111·75			
			§220·54		§The line Allahabad-Rae Bareli-Kanpur branch, 246·26 kilometres inclusive of Daryapur to Dalmau 25·72 kilometres (opened on 2-11-1911) which was dismantled during World War I was relaid and opened on 8-8-1927. The section Daryapur to Dalmau has been taken up.
Gajraula Chandpur Siau branch—					
Gajraula to Chandpur Siau	7-6-1911	35·21			
			35·21		
Raja-ka-Sahaspur to Sambal Hatim Sarai	25-6-1912	23·56			†This line which was dismantled during World War I was relaid and opened on 8th January 1922.
			†23·56		
Akbarpur to Tanda	30-3-1951	16·88‡	16·88		‡The branch, Akbarpur to Tanda was originally opened on 28-10-1932 and was taken up during the World War II and restored on the date now shown in column 2.
Increase on remeasurement		0·97	0·97		
Total—Broad Gauge (1·676 metres)	..	..	..	6,807·44	
Double Line—					
Kanpur-Ekdil	18-3-1950	49·71			
Bilpur-Bareilly	23-5-1949	3·60			@2·99 kilometres double line track transferred to Eastern Railway.
Bilpur-Tillar	2-9-1950	25·06			**4·38 kilometres double line track transferred to Eastern Railway.
Doubling main line	15-2-1949	0·64@			
Chanehti-Bareilly	25-10-1950	4·20			
Mughal sarai to Ahraura Road	10-8-1907	8·37**			
Ahraura Road to Kylahat	8-12-1908	7·96			
Kylahat to Chunar	29-12-1908	8·40			
Chunar to Dagmagpur	19-2-1909	7·90			
Gurrah to Tilhar	22-8-1944	14·48			
Gurrah Bridge to Shahjahanpur	22-8-1944	4·82			
Dagmagpur to Pahara	27-2-1909	7·90			
Pahara to Jhingura	16-1-1908	7·41			
Jhingura to Mirzapur	6-8-1907	10·87			
Mirzapur to Bindhachal	6-7-1911	7·33			
Bindhachal to Birohe	12-7-1911	4·68			
Birohe to Gaipura	26-9-1911	7·45			
Carried over			180·78	180·78	

NORTHERN RAILWAY SYSTEM—contd.

(i) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—contd.

PROGRESS IN OPENING—contd.

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward	..			180·78	
Double line—contd.	..				
Gaipura to Jigna	10-10-1911	6·98			
Jigna to Mandah Road	16-11-1911	8·43			
Mandah Road to Unchdih	30-11-1911	8·15			
Unchdih to Meja Road	23-11-1911	8·35			
Meja Road to Tonse bridge	26-10-1911	5·21			
Tonse bridge to Bheerpur	10-4-1911	5·76			
Bheerpur to Karchana	9-4-1911	9·23			
Karchana to Chheoki	6-8-1909	9·17			
Chheoki to Naini	31-1-1907	1·73			
Naini to Allahabad	15-1-1906 4-10-1913	6·05 0·96			
Allahabad to Subedarganj	27-1-1909	6·58			
Subedarganj to Manauri	12-6-1958	13·66			
Manauri—Manoharganj	28-8-1961	11·88			
Manoharganj—Bharwari	25-9-1961	7·81			
Bharwari—Bidanpur	26-2-1962	5·63			
Bidanpur—Sirathu	30-3-1962	14·16			
Sirathu—Kanwar	4-7-1962	12·21			
Kanwar—Khaga	28-3-1962	13·07			
Khaga—Sathnaraini	29-1-1962	7·27			
Sathunaraini—Rasulabad	8-1-1962	7·15			
Rasulabad—Faizullahpur	22-12-1962	9·17			
Faizullahpur-Ramva	25-2-1959	4·83			
Ramva-Kurastikalan	18-2-1959	12·88			
Kurastikalan-Kanspur Gugauli	8-4-1959	16·75			
Kanspur Gugauli-Aung	26-9-1959	13·79			
Aung to Karbigwan	26-2-1960	6·63			
Karbigwan to Prempur	23-11-1958	5·23			
Prempur to Chakeri	30-9-1958	16·90			
Chakeri to Chandari	6-10-1958	7·64			
Tundla to Makhanpur	31-3-1932	26·61			
Tundla—Barhan	30-3-1962	14·94			
Barhan—Jalesar Road	31-3-1963	13·19			
Pura—Aligarh Jn.	31-3-1963	40·37			
Aligarh—Mehrawal	28-11-1963	6·22			
Dadri—Maripet	30-9-1963	6·77			
Kanpur to Juhi	1-4-1930	5·74			
Chandri to Juhi	25-8-1942	1·80			
Kanpur diversion line	1-4-1930	1·99			
Makhanpur to Sarai Bhopat	11-1-1933	56·63			
Sarai Bhopat to Etawah	23-8-1935	7·54			
Etawah to Ekdil	20-10-1936 1-1-1940	9·02 0·64			
Kanpur to Ekdil	24-3-1948 11-2-1949	5·63 69·16			
Decrease on remeasurement	..	(—) 1·74			
Carried over			527·77	708·55	

NORTHERN RAILWAY SYSTEM—contd.

(i) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*concld.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward				708·55	
Double line—contd.					
Varanasi to Lohta	16-2-1949	5·02			
Varanasi—Shivpur	1-2-1962	5·72			
Babatpur—Khalispur	7-8-1961	9·32			
Khalispur—Jallalganj	19-6-1961	11·29			
Jallalganj—Sarkoni	3-9-1961	6·28			
Sarkoni—Zafarabad	3-9-1961	5·67			
Tilher to Bilpur	3-2-1949	16·47			
Hardoi to Kahilia	15-12-1945	47·00			
Balamau to Hardoi	22-11-1946	32·80			
Malihabad to Balamau	30-4-1947	44·64			
West cabin to Central cabin in Varanasi yard	31-3-1958	0·67			
			184·88		
Lucknow Blockhut to Kakori	11-10-1900	18·62			
Kakori to Malihabad	3-6-1941	9·91			
Mughalsarai to Bechupur	21-4-1913	1·99			
Bechupur to right bank of Dufferin Bridge	21-12-1912	6·74			
Kashi to Banaras Cantonment	5-3-1913	4·53			
Kahilia to Rosa	16-9-1942	8·45			
Rosa to Khanaut	19-1-1940	4·13			
Khanaut to Shahjahanpur	21-3-1941	1·38			
Dilkhusa to Utraitia	31-3-1956	8·53			
			64·28		
Unnao-Magarwara	27-7-1958	5·86			
Kanpur to Kanpur Bridge Right Bank	13-7-1959	2·72			
Hindon Cabin to Khanalampura West	28-11-1960	3·61			
Hindon Cabin—Khanalampura Goods	3-4-1963	2·01			
Hindon Cabin—Baliakhere	14-3-1962	3·81			
Chodiala-Baliakheri	30-7-1958	10·46			
Chodiala-Iqbalpur	20-11-1959	6·90			
Iqbalpur-Roorkee	16-12-1959	7·43			
Roorkee—Dhandhera	29-6-1963	2·82			
Dhandhera-Landhaura	7-12-1959	4·96			
Landhaura—Dausni	4-3-1963	4·93			
Dausni-Laksar	5-3-1961	5·52			
Laksar—Raisi	26-3-1962	7·84			
Raisi—Balawali	31-12-1962	7·56			
Balawali—Chandok	5-3-1963	6·92			
Chandok—Muazzampur Narain*	6-1-1963 } 4-3-1963 }	7·04*			*Doubling of track on Milan bridge (0·38 kilo metres) between Chandok and Muazzampur Narain was completed and opened for traffic on 4-3-1963.
Laksar—Banganga West Cabin	6-2-1962	6·81			
Muazzampur Narain—Najibabad	27-10-1961	11·25			
Majibabad—Murshadpur	31-3-1962	6·50			
Carried over			114·95	1,072·66	

NORTHERN RAILWAY SYSTEM—contd.

(i) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*concld.*

Section of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward				1,072·66	
Murshadpur—Bundki	17-3-1962	5·81			
Bundki—Nagina	28-11-1962	9·80			
Nagina-Habibwala	23-4-1962	11·44			
Habibwala-Dhampur	24-10-1962	5·18			
Dhampur—Chakrajmal	26-2-1963	6·87			
Chakrajmal-Seohara	23-2-1963	6·74			
Seohara—Mewanawada	8-12-1962	10·11			
Mewanawada-Kanth	5-12-1962	6·57			
Kanth-Matalabpur	1-12-1962	8·51			
Matalabpur—Agwanpur	25-12-1962	9·67			
Agwanpur-Harthala	28-12-1962	5·65			
Harthala-Moradabad West Cabin	5-7-1960	3·75			
Magarwara-Kanpur Bridge left bank	26-8-1960	7·76			
Shivpur-Babatpur Doubling	18-3-1961	12·83			
			110·69		
Between Delhi and Atari—					
Delhi-Ghaziabad	20-2-1902	21·58			
Saharanpur-Kalanaur	13-5-1913	25·70			
Kalanaur-Ambala	15-11-1913	56·34			
Ambala-Rajpura	2-12-1910	27·76			
Rajpura-Sirhind	15-12-1910	25·34			
Sirhind-Gobindgarh	10-1-1911	8·04			
Gobindgarh-Doraha	15-12-1910	27·43			
Doraha-Ludhiana	10-1-1911	23·67			
Ludhiana-Phagwara	11-6-1911	37·49			
Phagwara-Jullundur Cantt.	20-4-1911	16·44			
Jullundur Cantt. Hamira	13-3-1910	25·67			
Hamira-Dhilwan	12-9-1911	10·99			
Dhilwan-Beas	28-2-1914	3·20			
Beas-Butari	10-12-1910	11·02			
Butari-Jandiala	19-7-1910	12·55			
Jandiala-Amritsar	23-3-1910	18·15			
Amritsar-Atari	15-1-1906	27·50			
Atari-Boundary line	15-1-1906	0·90			
Saharanpur-Khanalapura		1·19			
			380·96		
Carried over				1,564·31	

NORTHERN RAILWAY SYSTEM—contd.

(i) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—contd.

PROGRESS IN OPENING—concld.

Section of Railway	Date of opining	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward .				1,564·31	
Between Hussainiwala and Bhatinda—					
Ferozepore City-Ferozepore Cantt.	25-5-1923	4·49			
			4·49		
Delhi Kishanganj-Delhi Brewery Cabin (Rohtak line) (e)	1-1-1912 1-7-1912	1·28			(e) Purchased by the State on 1-1-1930.
Delhi Brewery Cabin-Delhi Junction	20-12-1909	1·99			
			3·27		
Delhi Brewery Cabin—Subzimandi	1-3-1891	1·25			
Doubling in Subzimandi yard		0.64	1·89		
A.D.C. Cabin-New Delhi	1912	2·88			
			2·88		
Hazrat Nizamuddin to Junction point (of N.R. & C.R.) .	16-2-1949	6·95			
Junction point of (N.R. & C.R.) to Tughlakabad . .	30-1-1949	9·44			
Hazrat Nizamuddin to Junction point (N.R. & C.R. Railways)	12-2-1949	2·25			
			18·64		
Total—Double line (1·676 metres)				1,595·21*	* The difference of 0·27 is due to rounding off of figures.
Under Construction or sanctioned for construction—					
Tundla-Ghaziabad doubling—					
(i) Jalesar Road-Pura		9·62			
(ii) Mehrawal-Dadri	..	82·89			
(iii) Maripat-Ghaziabad	..	10·13			
Construction Avoiding Lines, Delhi area (Ring Railway) .	..	17·67			
Goods Avoiding Line between Ghaziabad and Tughalakabad including second Jamuna Bridge—					
(i) Joining existing Delhi-Ghaziabad line on Delhi side of Sahibabad Station	..	26·55			
(ii) Connecting Jamuna Bridge to New Delhi Station .	..	5·79			
Madhopur-Kathua	..	8·69			
Mukerian-Talwara rail link	..	28·50			
Construction of new line from Hindumalkot to Sriganga Nagar	..	27·49			
			217·33	217·33	

NORTHERN RAILWAY SYSTEM—contd.

(i) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

DETAILS OF CONSTRUCTION

EASTERN PUNJAB RAILWAYS SECTION

(*i*) *Permanent way*—On the main lines the rails are mainly 44.61 kilograms/metre (90 lbs/yard) FF. (B.S.S. & R.).

On the branch lines the rails are 44·61, kilograms/metre (90 lbs/yard) BSS, BNR, 44·61 kilograms/metre (90 lbs/yard) BSS/SS, 43·16 kilograms/metres (87 lbs/yards) F.F. rails, 37·13 kilogram/metre (75 lbs/yard) BSS of F.F. type but 42·62 kilograms/metre (85½ lbs/yard), 44·11 kilograms/metre (88½ lbs/yard) and 38·88 kilograms/metre (78 lbs/yard) of DH type have also been laid. Some of 37·13 kilograms/metre (75 lbs/yard) F.F. rails are of 1887, 1892 and 1904.

Wooden sleepers, of deodar, treated and untreated, with treated fir, Kail and Chir Sleepers have been largely used but hard wood sleepers like teak, Pynkado sal, Jarrah, Asna and Burmese have also been put in. In addition metal sleepers consisting of C.I. plates of various designs and steel troughs have been widely used. C.I. pots are also laid in small lengths. Bearing plates are used on soft wood sleepers, and anchor plates are used on all kinds of sleepers for prevention of creep.

(*ii*) *Ballast*—The line is ballasted with broken stones, shingle or broken brick.

(*iii*) *Curve*—The sharpest curve on the commercial section is 445 metres radius.

(*iv*) *Gradients*—On the Commercial section, the ruling gradient is 1 in 200 but there are important exceptions such as the section Ambala to Kalka which is 1 in 40. Some of the commercial branch lines are also graded sleeper than 1 in 200, such as the section Amritsar to Pathankot which is 1 in 170 and the sections Ferozepore Cantt. to Ludhiana, Jullundur Cantt. to Hoshiarpur which are 1 in 200.

Jullundur-Mukerian-Pathankot

[Mukerian-Pathankot is a strategic Section]

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs/yard) R, 44·61 kilograms/metre (90 lbs/yard) BSS, BNR and 44·61 kilograms/metre (90 lbs/yard) rails laid on treated chir, treated fir, treated deodar and steel trough sleepers.

Ballast—The line has been ballasted throughout with stone ballast.

Fencing—Fencing has been provided only at 1st class level crossing for a short distance on each side of the gates.

Curve—The sharpest curve is of 582 metres radius.

Gradient—The ruling gradient from Jullundur to Mirthal is 1 in 250 and Mirthal to Pathankot 1 in 150.

Phagwara-Rahon and Nawashahr Jaijon Extension

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs/yard) and 92·75 R, 43·16 kilograms/metre (87 lbs/yard) FF and 44·61 kilograms/metre (90 lbs/yard) BSS rails laid on steel trough, CST/9, Fouler box/SS and wooden sleepers.

Ballast—The line is ballasted throughout with stone.

Fencing—The fencing has only been provided at 1st class level crossing for a short distance on each side of the gates.

Curve—The sharpest curve is of 582 metres.

Gradient—The ruling gradient of Phagwara Rahon branch is 1 in 400 and of Nawashahr-Jaijon extension is 1 in 100.

Jind-Panipat Section

Permanent way—The permanent way consists of second hand 37·13 kilograms/metre (75 lbs/yard) double headed and 37·13 kilograms/metre (75 lbs/yard) B.S.S., S.S. rails laid on soft wood and D.O. plates sleepers.

Ballast—The line is ballasted with stones and brick ballast.

Fencing—The line is fenced only round station-yards, and at important road crossings and villages.

Curve—The sharpest curve has a radius of 873 metres.

Gradients—The ruling gradient is 1 in 250.

Rohtak-Gohana

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs/yard) R and 44·11 kilograms/metre (88½ lbs/yard) BH/SS rail on wooden and D and O plate/SS sleepers.

Ballast—The line is earth packed.

Curve—The sharpest curve is of 540 metres.

Fencing—The section throughout is unfenced.

Gradient—The ruling gradient is 1 in 300.

NORTHERN RAILWAY SYSTEM—contd.

(*i*) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

DETAILS OF CONSTRUCTION—*contd.*

EASTERN PUNJAB RAILWAYS SECTION

Delhi-Tughalakabad

Permanent way—The permanent way consists of 44·61 kilograms/metre (90 R and 90 lbs/yard) BSS rails laid on CST/9, steel trough and wooden sleepers.

Ballast—Broken stone.

Curve—The sharpest curve is of 305 metres.

Gradient—The ruling gradient is 1 in 400.

Ludhiana-Dhuri Hissar Branch

Permanent way—The permanent way consists of 37·13 kilograms/metre(75 lbs/yard) 92, 44·61 kilograms/metre (90 lbs/yard) BSS/SS/FF, 46·61 kilograms/metre (90 lbs/yard) R and 37·13 kilograms/metre (75 lbs/yard) R, laid on treated chir kail, treated deodar with bearing plates, steel trough, CST/9, and MWR sleepers.

Ballast—The line is ballasted throughout with brick and stone ballast.

Fencing—Only station yards and about 30·48 metres on each side of level crossing are fenced.

Curve—The sharpest curve is of 582 metres radius.

Gradients—The ruling gradient is 1 in 400.

Rajpura-Bhatinda Branch

Permanent way—The line from Rajpura to Patiala is laid with 37·13 kilograms/metre (75 lbs/yard), 92, 37·13 kilograms/metre (75 lbs/yard) R and 37·13 kilograms/metre (75 lbs/yard) BSS rails on CST/9, treated chir, treated deodar and steel trough sleepers, From Patiala to Bhatinda. The section is laid with 37·13 kilograms/metre (75 lbs/yard) R, 37·13 kilograms/metre (75 lbs/yard) BS, 37·13 kilograms/metre (75 lbs/yard)/87, 43·16 kilograms/metre (87 lbs/yard) FF rails on deodar treated and untreated, treated chir, treated fir and steel trough sleepers.

Ballast—The line is ballasted throughout with brick and stone.

Fencing—The line is fenced between Rajpura and Bhatinda only at Station yards, and 30·48 metres on each side of level crossing.

Curve—The sharpest curve is of 352 metres radius.

Gradient—The ruling gradient is 1 in 400 with 1 in 250 on long approaches from kilometre 48·28 to kilometres 48·72 and kilometre 48·92 to kilometre 49·89, 1 in 300 from kilometre 83·69 to kilometre 85·22 and kilometre 85·38 to kilometre 85·52 on approaches of B. No. 172.

Sirhind-Rupar Nangal dam Branch

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs/yard)/R, 37·13 kilograms/metre (75 lbs/yard)/92, 37·13 kilograms/metre (75 lbs/yard) 87, 37·13 kilograms/metre (75 lbs/yard) I.S.R., 42·37 kilograms/metre (85 lbs./yard) FF, 43·16 kilograms/metre (87 lbs./yard) FF and 44·61 kilograms/metre (90 lbs/yard) BSS/SS rails laid on hard and soft wood sleepers and also steel trough and CST/9 sleepers.

Ballast—The line is ballasted throughout with stone.

Fencing—The line is unfenced.

Curve—The sharpest curve is 582 metres radius.

Gradient—The ruling gradient on the Sirhind-Rupar is 1 in 250, on Rupar-Nangal Dam is 1 in 200.

MORADABAD DIVISION

Moradabad-Saharanpur Section (Main Line) Broad Gauge—1·676 metres.

Permanent way—The permanent way consists of 44·61 kilograms/metre (90 lbs/yard) R.B.S.S., F.F., 44·61 kilograms metre (90 lbs/yard) R (welded), 44·61 kilograms/metre (90 lbs/metre) B.S.F.F. rails laid on C.S. T./9 steel trough, treated Chir Hard wood and type (G) slpeepers.

Ballast—The main line is ballasted throughout with stone.

Curve—The sharpest curve is of 873 metres radius.

Gradient—On main line from Moradabad to Saharanpur Section, ruling gradient between Moradabad-Bundki is 1 in 500 and Bundki to Saharanpur it is 1 in 300.

NORTHERN RAILWAY SYSTEM—contd.

(*i*) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

DETAILS OF CONSTRUCTION—*contd.*

MORADABAD DIVISION—contd.

Moradabad-Lucknow (Main Line)

Permanent way—The permanent way consists of 52 kilograms/metre (105 lbs/yard) welded, 44·61 kilograms/metre (90 lbs/yard) RBSS FF, 44·61 kilograms/metre (90 lbs/yard) BSFF, 44·61 kilograms/metre (90 lbs/yard) R (welded) and BS FF (welded) rails laid on steel trough, wooden, CST/9 and G type sleepers.

Ballast—The main line is ballasted throughout with stone and sand stone.

Curve—The sharpest curve is of 577 metres radius.

Gradient—On the main line from Moradabad to Lucknow Section, ruling gradient is 1 in 500.

Lhaksar-Dehradun Branch

Permanent way—The permanent way consists of 37·33 kilograms/metre (75 lbs/yard) I.S.R. 44·61 kilograms/metre (90 lbs/yard) R and 44·61 kilograms/metre (90 lbs/yard) B.S.S. laid on C.I. C.S.T./9, G Type and hard wood sleepers.

Ballast—The branch line is ballasted throughout with stone.

Curve—The sharpest curve is of 388 metres radius.

Gradient—On the branch line from Lhaksar to Dehradun ruling gradient between Lhaksar Hardwar is 1 in 200 (and from Hardwar to Dehra Dun it is 1 in 75.

Raiwala-Rishikesh Branch

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs/yard) ISR rails laid on CST/9 sleepers.

Ballast—The branch line is ballasted throughout with stone.

Curve—The sharpest curve is of 1,747 metres radius.

Gradient—On this branch line the ruling gradient from Raiwala to Rishikesh it is 1 in 75.

Najibabad-Kotdwara Branch

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs/yard) ISR rails laid on CST/9 sleepers.

Ballast—The branch line is ballasted throughout with stone.

Curve—The sharpest curve is of 582 metres radius.

Gradient—On this branch line from Najibabad to Kotdwara the ruling gradient is 1 in 100.

Moradabad-Ghaziabad

Permanent way—The permanent way consists of 44·61 kilograms/metre (90 lbs/yard) R rails laid on C.I. CST/9 steel trough, G type, L.K. type 3/STSC and hard wood sleepers.

Ballast—The branch line is ballasted throughout with stone.

Curve—The sharpest curve is of 699 metres radius.

Gradient—On this branch line from Moradabad to Ghaziabad the ruling gradient is 1 in 250.

Unnao-Madhoganj-Balamau Branch

Permanent way—The permanent way consists of 44·61 kilograms/metre (90 lbs/yard) R and 44·11 kilograms/metre (88½ lbs./yard) B.H. rails laid on Sal, D and O plates, Steel Trough, Duplex at joints.

Ballast—The branch line is ballasted throughout with stone and ash.

Curve—The sharpest curve is of 380 metres radius.

Gradient—On this branch from Unnao to Madhoganj the ruling gradient is 1 in 400.

Fencing—The line is unfenced throughout.

Bareilly-Aligarh Branch

Permanent way—The permanent way consists of 44·61 kilograms/metre (90 lbs/yard (welded, 37·13 kilograms/metre (75 lbs/yard) R.B.S. and 37·13 kilograms/metre (75 lbs./yard) ISR rails laid on C.I. CST/9 hard and soft wood Q type and F. Box sleepers.

Ballast—The branch lines are ballasted throughout with stone.

Curve—The sharpest curve is of 1,163 metres radius.

Gradient—On the branch line from Bareilly to Aligarh ruling gradient between Bareilly and Chandausi is 1 in 500, between Chandausi-Rajghat Narora is 1 in 300 and from Raj Ghat Narora to Aligarh it is 1 in 400.

Raja-ka-Sahaspur-Sambhal Hatim Sarai

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs/yard) ISR rails laid on CST/9 and Q type sleepers.

Ballast—The branch lines are ballasted throughout with stone.

Curve—The sharpest curve is of 436 metres radius

Gradient—On the branch line from Raja-ka-Sahaspur to Sambhal Hatim Sarai the ruling gradient is 1 in 338.

Balamau-Sitapur Branch

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs/yard) ISR rails laid on fowler Box, steel trough, treated chir and treated deodar sleepers.

Ballast—The branch line is ballasted throughout with stone and earth with Kankar.

Curve—The sharpest curve is of 582 metres radius.

Gradient—On this branch line the ruling gradient is 1 in 500.

Rosa-Sitapur Branch

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs/yard) ISR rails laid on hardwood and C.I. CST/9, fowler box, treated chir and treated deodar sleepers.

Ballast—The branch line is ballasted throughout with stone, earth with Kankar and bricks.

Curve—The sharpest curve is of 291 metres radius.

Gradient—On this branch line the ruling gradient is 1 in 500.

NORTHERN RAILWAY SYSTEM—contd.

(*i*) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

DETAILS OF CONSTRUCTION—*contd.*

MORADABAD DIVISION—contd.

Gajraula-Mauzzampur Narain

Permanent way—The permanent way consists of 44·61 kilograms/metre (90 lbs/yard), 37·13 kilograms/metre (75 lbs/yard) ISR and 44·11 kilograms/metre (88½ lbs/yard) BH rails laid on C.I. CST/9, steel trough, D&O plates and hard and soft wood sleepers.

Ballast—The branch is ballasted with stone and shingle.

Curve—The sharpest curve is of 582 metres radius.

Gradient—On this branch line from Gajraula to Chand Siau the gradient is 1 in 500 and Chand Siau to Mauzzampur Narain it is 1 in 400.

Khurja-Meerut City

Permanent way—The permanent way consists of 49·85 kilograms/metre (100 lbs/yard) DHSS, 42·37 kilograms/metre (85 lbs/yard) BH., 37·13 kilograms/metre RBS and 44·61 kilograms/metre (90 lbs/yard) BSS rails laid on D & O plates CST/9 and steel trough sleepers.

Ballast—The branch line is ballasted throughout with stone.

Curve—The sharpest curve is of 582 metres radius.

Gradient—On this branch from Khurja to Hapur, ruling gradient is 1 in 200 & between Hapur to Meerut city it is 1 in 500,

Moradabad-Chandausi

Permanent way—The permanent way consists of 44·61 kilograms/metre welded (90 lbs./yard) RBS welded and 44·61 kilograms/metre (90 lbs/yard) RBS rails laid on Tr. Chir and C.I. CST/9, sleepers.

Ballast—The branch line is ballasted throughout with stone.

Curve—The sharpest curve is of 436 metres radius.

Gradient—On this branch from Moradabad to Chandausi the ruling gradient is 1 in 500.

Fencing—The line is fenced in station yards in suburbs and neighbourhood of level crossings.

LUCKNOW DIVISION

Mughalsarai-Lucknow Section Via Rae-Bareli—Main Line

Permanent way—The permanent way main line from Mughalsarai to Lucknow consists of 52 kilograms/metre welded (105 lbs/yard), 44·61 kilograms/metre (90 lbs/yard) R welded and 44·61 kilograms/metre (90 lbs/yard) B.S.S. rails laid on wooden C.I.G. type, C.S.T. 9 and steel trough sleepers.

Ballast—The line is ballasted throughout with stone.

Curve—The sharpest curve is of 381 metres radius.

Gradient—On the main line from Mughalsarai to Lucknow Section, ruling gradient between Mughalsarai-Banaras Cantt. is 1 in 300, between Banaras Cantt. and Janghai is 1 in 1000, between Janghai-Partapgarh is 1 in 600, between Partapgarh-Rae Bareli is 1 in 500 and between Rae-Bareli-Lucknow it is 1 in 375.

Varanasi Cantt-Lucknow—via loop (Main Line)

Permanent way—The permanent way consists of 44·61 kilograms/metre (90 lbs/yard) R welded, 44·61 kilograms/metre (90 lbs/yard) B.S.S. rails laid on G type, wooden, C.I. CST/9 and steel trough sleepers.

Ballast—The lines are ballasted throughout with stone.

Curve—The sharpest curve is of 454 metres radius.

Gradient—On this section from Banaras Cantt. to Lucknow ruling gradient between Banaras Cantt. Zafarabad is 1 in 400, between Zafarabad-Akbarpur is 1 in 393, between Akbarpur-Ayodhya is 1 in 300, between Ayodhya-Faizabad is 1 in 179, between Faizabad-Barabanki is 1 in 500, and from Barabanki to Lucknow it is 1 in 300.

Unchahar-Unnao (Branch Line)

Permanent way—The permanent way consists of 44·61 kilograms/metre (90 lbs/yard) BSS, 37·13 kilograms/metre (75 lbs/yard) I.S.R. and 37·13 kilograms/metre (75 lbs/yard) R rails on CST/9, fowler box, wooden sleepers and 49·85 kilograms/metre (100 lbs/yard) DH/SS and 44·11 kilograms/metre (88½ lbs/yard) BH/SS rails on D & O plate sleepers with Duplex sleepers at joints.

Ballast—The lines are ballasted throughout with stone.

Curve—The sharpest curve is of 629 metres radius.

Gradient—On this section from Unchahar-Unnao, ruling gradient is 1 in 500.

Zafarabad-Sultanpur Utraitia Branch

Permanent way—The permanent way consists of 44·61 kilograms/metre welded (90 lbs/yard)RBS/ rails laid on CST/9 and wooden sleepers.

Ballast—The branch lines are ballasted throughout with stone.

Curve—The sharpest curve is of 873 metres radius.

Gradient—On this branch from Zafarabad to Sultanpur and Sultanpur to Utraitia the ruling gradient in 1 is 400.

Faizabad-Allahabad (Branch Line)

Permanent way—The permanent way consists of 44·61 kilograms metre (90 lbs/yard) R., 44·61 kilograms/metre (90 lbs/yard) B.S, 37·13 kilograms/metre (75 lbs/yard) I.S.R. 37·13 kilograms metre (75 lbs/yard) R., B.S., F.F., rails laid on Fowler Box C.I. C.S.T./9, Wooden Q Type, K.K. Type, steel trough and G. Type Sleepers.

Ballast—The line is ballasted with stone.

Curve—The sharpest curve is of 582 metres radius.

Gradient—On this line from Faizabad to Allahabad ruling gradient between Faizabad-Chilbila is 1 in 400, between Chilbila-Partapgarh is 1 in 500, between Partapgarh-Phaphamau is 1 in 500 and from Phaphamau to Allahabad it is 1 in 400.

NORTHERN RAILWAY SYSTEM—contd.

(*i*) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

DETAILS OF CONSTRUCTION—*contd.*

LUCKNOW DIVISION

Lucknow-Kanpur (Branch line)

Permanent way—The permanent way consists of 44·61 kilograms/metre (90 lbs/yard) R, and 44·61 kilograms/metre (90 lbs/yard) B.S.S. rails laid on G type, wooden C.S.T./9 and steel trough sleepers.

Ballast—The lines are ballasted throughout with stone.

Curve—The sharpest curve is of 1,747 metres radius.

Gradient—On this section from Lucknow to Kanpur, ruling gradient between Lucknow-Alambagh is 1 in 500 and from Alambagh to Kanpur it is 1 in 200.

Zafarabad-Janghai-Phaphamau Section

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs./yard) R, 44·61 kilograms/metre (90 lbs/yard) rails laid on wooden C.I. C.S.T./9 and steel trough sleepers. 42·37 kilograms/metre (85 lbs/yard) BH/SS are laid on D and O plates/SS sleepers.

Ballast—The Branch lines are ballasted throughout with stone.

Curve—The sharpest curve is of 582 metres radius.

Gradient—On this branch from Zafarabad to Phaphamau the ruling gradient is 1 in 600.

Phaphamau-Unchahar-Rae Bareli

Permanent way—The permanent way consists of 44·61 kilograms/metre (90 lbs/yard) BSS 37·13 kilograms/metre (75 lbs/yard) I.S.R., 37·13 kilograms/metre (75 lbs/yard) R rails laid on C.S.T./9, wooden, fowler box steel trough sleepers. 100 lbs. DH/SS and 44·61 kilograms/metre (88½ lbs/yard) BH/SS rails are laid on D and O plates/SS with mostly Duplex sleepers at joints.

Ballast—The branch lines are ballasted throughout with stone.

Curve—The sharpest curve is 729 metres radius.

Gradient—On this branch line from Phaphamau to Rae Bareli the ruling gradient is 1 in 500.

Fencing—The line is fenced in stations yards in suburbs and industrial area in the immediate neighbourhood of level crossings.

ALLAHABAD DIVISION

Mughalsarai-Ghaziabad Section (Main Line)

Permanent way—The permanent way consists of 45·61 kilograms/metre (90 lbs/yard) I.S.R.F.F., 44·61 kilograms/metre (90 lbs/yard) BSS, 44·61 kilograms/metre (90 lbs/yard) R rails laid on steel trough, hard wood, and C.S.T./9 sleepers.

Ballast—The line is ballasted throughout with stone.

Fencing—The line is fenced in station yards in suburbs, industrial areas and in the immediate neighbourhood of level crossings.

Curve—The sharpest curve is of 436 metres radius.

Gradient—On the main line from Mughalsarai to Ghaziabad section, ruling gradient between Allahabad-Mughalsarai is 1 in 500 between Allahabad-Kanpur is 1 in 1,000, between Kanpur-Shikohabad the gradient is 1 in 366, between Shikohabad-Khurja is 1 in 1,000 and from Khurja to Ghaziabad, it is 1 in 787.

Shikohabad-Farukhabad Branch

Permanent way—The Permanent way consists of 44·61 kilograms/metre (90 lbs/yard) BS/SS, 37·13 kilograms/metre (75 lbs/yard) DH and 37·13 kilograms/metre 75 lbs/yard) R rails laid on CST/9, D & O plate wooden and modified CST/9 sleepers.

Ballast—The line is ballasted throughout with stones.

Curve—The sharpest curve is of 873 metres radius.

Gradient—On the branch line the ruling gradient is 1 in 400.

Fencing—The line is fenced in station yards in suburbs industrial area and in the immediate neighbourhood of level crossings.

Tundla-Agra Branch

Permanent way—The permanent way consists of 44·61 kilograms/metre (90 lbs/yard) R.B.S. rails laid on S.M. Channel, C.S.T./9, 35/T.S.C., L.K. 35 T.S.C. universal and wooden sleepers.

Ballast—The branch line is ballasted throughout with stones.

Curve—The sharpest curve is of 699 metres radius.

Gradient—On the Branch line the ruling gradient is 1 in 200.

Fencing—The line is fenced in station yards and immediate neighbourhood of level crossings.

Hathras-Hathras Killah Branch

Permanent way—The Permanent way consists of 37·13 kilograms/metre (75 lbs./yard) R rails laid on C.S.T./9 sleepers.

Ballast—The branch line is ballasted throughout with stones.

Curve—The sharpest curve is 582 metres radius.

Gradient—On the branch line the ruling gradient is 1 in 800.

Fencing—The line is fenced in station yards and immediate neighbourhood of level crossings.

Allahabad-Sangam Branch

Permanent way—The Permanent way consists of 44·11 kilograms/metre (88½ lbs/yard) B.H., 37·13 kilograms/metre (75 lbs/yard) and 42·37 kilograms/metre (85 lbs./yard) B.H. rails laid on D. & O. plates sleepers.

Ballast—The branch line is ballasted throughout with stone.

Curve—The sharpest curve is of 305 metres radius.

Gradient—On the branch line the ruling gradient is 1 in 100.

Fencing—The line is fenced in station yards and immediate neighbourhood of level crossings.

NORTHERN RAILWAY SYSTEM—contd.

(*i*) NORTHERN RAILWAY (BROAD GAUGE 1·676 METRES)—*contd.*

DETAILS OF CONSTRUCTION—*contd.*

ALLAHABAD DIVISION—contd.

Chunar-Churk Branch

Permanent way—The permanent way consists of 44·61 kilograms/metre welded (90 lbs/yard) R and 44·61 kilograms/metre (90 lbs./yard) R rails laid on wooden and CST/9 sleepers.

Ballast—This branch line is ballasted throughout with stone.

Curve—The sharpest curve is of 355 metres radius.

Gradient—On the branch line the ruling gradient is 1 in 80.

Fencing—The line is fenced in station yards and in the neighbourhood of level crossings.

Barhan-Etah Branch

Permanent way—The permanent way consists of 44·11 kilograms/metre (88½ lbs/yard)/S.S. and 42·37 kilograms/metre (85 lbs/yard)/SS BH rails laid on CID and O plates/SS sleepers with Duplex sleepers at joints.

Ballast—The section is earth packed.

Curve—The sharpest curve is of 873 metres.

Gradient—The ruling gradient is 1 in 500.

STATISTICS OF WORKING

In comparing the fluctuations in the financial results, the following changes in accounting and financial structure of Railways effective during the two years 1952-3 and 1953-4 should be borne in mind.

(*i*) The earning actually collected by a Zonal Railway either in cash or by book adjustment was taken in the accounts as the earnings of that Railway and no apportionment of earnings accruing from the traffic interchanged between the Indian Railways was made.

(*ii*) Inter-Railway adjustments were not made in respect of the expenditure on manufacture, repair and overhaul of rolling stock at workshops of one Railway on behalf of another (except the independent manufacturing units like Chittaranjan Locomotive works and Integral Coach Factory etc).

(*iii*) No inter-Railway adjustment was made in the financial accounts of freight charges for the carriage of railway stores, fuel etc. i.e., so far as the financial accounts are concerned these stores were carried free of charge.

For the purpose of these statistics, the integration of the Northern Railway has been assumed to have taken place on 1st April 1952 instead of 14th April 1952.

The figures of gain/loss shown in the tables of statistics of working, do not include receipts from subsidised companies—Government share of surplus profits, railway miscellaneous receipts, miscellaneous railway expenditure, expenditure on subsidised railways and expenditure relating to open Line Works.

Table A.—Northern Railway system (all gauges combined)—(Includes Rupar Nangal Dam Railway)

year	Route kilometrage open at the end of each year	Total Capital outlay, including suspense to end of each year i.e. outlay on (*i*) lines open & (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay or capital at charge given in Col. (3)	Payment to General Revenues	Gain or loss to the State, pertaining to each year	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1952-3	9,719·98	1,35,18,33,702	45,51,79,114	12,62,51,259	‡	5,25,52,729	‡	‡	‡
1953-4	9,739·17	1,36,90,87,143	45,68,86,737	11,49,21,893	‡	5,29,41,376	‡	‡	‡
1954-5	10,063·64	§1,4[illegible],25,10,815	42,84,98,565	7,68,13,553	5·48	5,38,59,386	2,29,54,167	817	82.07
1955-6	10,203·12	1,49,69,19,656	50,09,44,008	10,74,35,961	7·18	5,55,64,681	5,18,71,280	939	78·55
1956-7	10,201·03	1,64,00,53,964	54,81,35,141	11,68,89,755†	7·13	6,01,95,093	5,66,93,302	1,030	78·67
1957-8	10,248·94	1,81,35,30,336	60,61,10,530	14,14,35,292	7·80	6,59,29,826	7,55,05,466	1,134	68·67
1958-59	10,355·60	2,00,97,14,305	60,53,72,415	12,77,11,178	6·35	7,52,86,056	5,24,25,122	1,121	78·90
1959-60	10,347·29	2,09,20,72,668	63,29,05,174	13,79,43,868	6·59	7,88,77,611	5,90,66,257	1,169	78·20
1960-61	10,364·17	2,22,69,46,584	64,46,42,044	11,70,82,463	5·26	7,97,33,189	3,73,49,274	1,193	81·84
1961-62									
Commercial	10,322·70	2,37,30,30,249	71,49,24,794	12,91,07,766	5·44	11,06,81,706*	1,84,26,060	1,328	81·94
Strategic	41·47	3,92,93,222	19,69,363	—16,87,070	—4·29	89,364**	—17,76,434	911	185·94
1962-63									
Commercial	10,324·06	2,61,25,41,226	80,71,80,802	17,85,08,477	6·83	11,74,72,681*	6,10,35,796	1,499	77·88
Strategic	41·47	3,97,03,913	22,65,958	—16,12,958	—4·06	89,509**	—17,02,467	1,048	171·18
1963-64									
Commercial	10,324·06	2,88,02,83,667	91,83,43,547	22,21,74,451	7·71	13,17,58,707*	9,04,15,744	1,701	75·81
Strategic	41·47	4,01,84,956	27,00,196	—11,74,848	—2·92	97,946**	—12,72,794	1,245	143·51

NOTE—The figures of capital-at-charge are provisional pending closing of prepartition accounts and the finalization of the balances of ex-States' railways brought forward on 1 April 1950.

(*i*) Includes capital-at-charge viz. 44,41,00,000 on 15-8-47 of Ex. E. P. Railway and capital outlay of Rupar-Nangal Section upto 14-8-47 Rs. 25,00,895.

(*ii*) Includes capital outlay on Rupar-Nangal Dam Railway incurred by Railway Department only vide col. 3 (*a*) of table (*c*) i e. excluding the capital outlay incurred by the Punjab Government.

(*iii*) Includes capital expenditure of Rs. 3,56,05,929, Rs. 3,57,15,371, Rs. 3,57,58,285, Rs. 3,58[illegible]0,42[illegible] Rs. 3,60,28,101, Rs. 3,60,47,799, Rs. 3,60,43,569 Rs. 3,60,34,979 and Rs. 3,61,04,221 upto the year 1952-53, 1953-54, 1954-55, 1955-56, 1956-57, 1957-58, 1958 59, 1959-60 and 1960-61 respectively relating to Mukerian Pathankot Sections

(*iv*) Includes the transfer of the capital at charge on 31-3-52 without financial adjustment from Ex. E I. Railway (67[illegible]9,15,017). Western Railway (1,85,87,722), Central Railway (5,67,268), Ex. Jodhpur Railway (5,49,21,958) and Ex. Bikaner State Railway (4,66,26,437), Total (79,36,18,402).

*The figures of payment to General Revenues represent dividend only upto the year 1960-61. For the years 1961-62 to 1963-64, these figures are, however, inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 2,16,82,886, Rs. 2,20,84,243 and Rs. 2,19,39,559 for the years 1961-62, 1962-63, and 1963-64., respectively.

**The figures represent only payment to the General Revenues in lieu of tax on passenger fares and not dividend as the capital-at-charge of the Strategic lines is exempt from the payment of dividend.

† Includes Rs. 1,360 on a/c of reversal adjustment of dividend Less paid to Central Govt. during 1956-57 in respect of ex-Bikaner State Rly.

‡ These results have not been worked as the figures of gross earnings and working expenses as booked in individual Railways' accounts during the years 1952-3 and 1953-4 did not represent the true systemwise apportioned and adjusted figures, as stated above.

(§) Includes provisional figures of capital outlay of part B State Railways viz. 1,82,03,481 integrated with Ex. Eastern Punjab Railway, (Now—Northern Rly.) system with effect from 13-4-50 pending closing of accounts for period ending 14-8-47.

NORTHERN RAILWAY SYSTEM—*contd.*

(*i*) NORTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*concld.*

STATISTICS OF WORKING—*concld.*

Table B—Northern Railway (Broad Gauge—1·676 metres)

Year	Route kilometrage open at the end of each year	Total capital outlay, including suspense to end of each year i.e. outlay on (i) lines open and (ii) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay or capital-at-charge given in Col. (3)	Payment to General Revenues	Gain or loss to the State. Pertaining to each year	Earnings per route kilometre per week	Proportion of expenses to arning
1	2	3	4	5	6	7	8	9	10
		Rs.	Rs.	Rs.		Rs.	R	Rs	..
1952-3	6,285·19	†	†	†	†	†	†	†	†
1953-4	6,304·37	†	†	†	†	†	†	†	†
1954-5	6,574·04	1,24,29,32,000	37,16,53,916	7,63,83.035	6·15	4,75,66,000	2,88,17,035	10,840	79.45
1955-6	6,713.78	1,32,62,81,000	43,49,65,674	10,82,30,339	8·16	4,89,60,000	5,92,70,339	1,239	75·12
1956-7	6,713·78	1,44,28,05,000	47,70,66,680	12,07,39,285	8·37	5,28,37,000	6,79,02,285	1,329	74·69
1957-8	6,761·69	1,59,04,01,000	52,31,68,297	14,13,73,698	8·89	5,75,22,266	8,38,51,432	1,492	72·98
1958-9	6,798·87	1,76,42,84,000	52,81,89,215	12,87,35,552	7·29	6,59,13,516	6,28,22,036	1,490	75·63
1959-60	6,790.56	1,83,86,18,000	54,72,70,144	13,50,28,417	7·34	6,88,99,916	6,61,28,501	1,541	75·33
1960-1	6,807·44	1,97,26,57,501	55,49,84,940	11,71,82,955	5·94	6,95,78,312	4,76,04,643	1,564	78·86
1961-62									
Commercial	6,765·97	2,11,29,92,937	62,12,33,151	13,34,25,561	6·31	9,65,58,519††	3,68,67,042	1,761	78·52
Strategic	41·47	3,92,93,222	19,69,363	—16,87,070	—4·29	89,364**	—17,76,434	—911	185·93
1962-63									
Commercial	6,765·97	2,34,27,72,412	69,89,67,539	17,35,62,386	7·40	10,28,38,531††	7,07,23,855	1,981	75·16
Strategic	41·47	3,97,03,013	22,65,958	—16,12,958	—4·06	89,509**	—17,02,467	—1,048	171·18
1963-64									
Commercial	6,765·97	2,57,26,09,060	79,85,26,230	21,30,07,809	8·28	11,56,09,128††	9,73,98,681	2,257	73·32
Strategic	41·47	4,01,84,956	27,00,196	—11,74,848	—2·98	97,946**	—12,72,794	—1,245	143·51

† Included under table 'A'. Separate gauge wise figures were not recorded.

††The figures of payment to General Revenues represent dividend only upto the year 1960-61. For the years 1961-62 to 1963-64, these figures are, however, inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 1,84,68,720, Rs. 1,88,86,444 and Rs.1,87,82,457 for the years 1961-62, 1962-63 and 1963-64 respectively.

**The figures represent only payment to the General Revenues in lieu of tax on passenger fares and not dividend as the Capital-at-charge of the strategic lines is exempt from the payment of dividend.

(*ii*) RUPAR-NANGAL-DAM RAILWAY (BROAD GAUGE—1·676 METRES)

PROGRESS IN OPENING

Sections of the Railway	Date of opening	Kilometres	Total
1	2	3	4
Rupar to Anandpur Sahib	3-2-1948*	35·88	
Anandpur Sahib to Nangal Dam	9-10-1948	20·17	56·05

*Open for goods traffic only on 3-2-1948 and for passenger traffic from 9-10-1948.

DETAILS OF CONSTRUCTION

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs/yard) and 43·16 kilograms/metre (87 lbs/yard) D.H. and 42·37 kilograms/metre (85 lbs/yard) F.F. rails laid on treated fir, treated chir, deodar and C.I. sleepers.

Ballast—The track is earth packed throughout except at points crossings in approaches of girder bridges and in cuttings where stone ballast is provided.

Fencing—The line is unfenced.

Curve—The sharpest curve is 582 metres radius.

Gradient—The steepest gradient is 1 in 200.

AGREEMENT

Dated 19th July 1947 between the Central Government and the Punjab Government.

MAIN PROVISIONS OF AGREEMENT

All removeable assets such as permanent way, girders, signals, telegraph equipment, etc., have been charged to the Railway funds of the Central Government, whereas immovable assets such as land, earth work, ballast, concrete masonry of bridges, buildings etc. have been paid for by the Punjab Government.

The line is worked by the Central Government which deducts the working expenses, depreciation charges in respect of all assets (whether paid for by Central or the Punjab Government) and hire on rolling-stock at 8 per cent of the gross earnings. The balance constitutes net earnings of the line.

After meeting various liabilities the surplus is divided between the Pubjab Government and the Central Government in proportion to their respective shares in the capital-at-charge of the line.

The terms of this agreement will be in force for a period of 20 years from the date of the opening of the line to public traffic. At the end of this period the Central Government will have the option of taking over the whole of the assets by paying in full book value of the Punjab Government's share of the capital-at-charge of the line or of dismantling the remove able assets if line is clearly unproductive to the Railway (Central Government) in which case the Punjab Government, will have the option of acquiring the Railway assets on payment of their depreciated value or of continuing the initial arrangements for a further period of 5 years. If the Central Government at any time purchase assets paid for by the Punjab Government they shall not subsequently close down the line without giving the Punjab Government the option of purchasing the line.

NORTHERN RAILWAY SYSTEM—*contd.*

(ii) RUPAR-NANGAL-DAM RAILWAY (BROAD GAUGE—1·676 METRES)—*concld.*

STATISTICS OF WORKING—(Statistics prior to 1949-50 are not available)

Note :—The figures in this table are also included in the statistics of working of the Northern Railway vide note on top of the table of statistics of working of that Railway.

Year	Route kilometrage open at end of each year	Total capital outlay including suspense to end of each year i.e. outlay on (*i*) line open and (*ii*) lines partly or wholly under construction: Outlay by E. P. Railway now Northern Railway	Outlay by the Punjab Government	Total	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay
1	2	3(*a*)	3(*b*)	3(*c*)	4	5	6
		Rs.	Rs.	Rs.	Rs.	Rs.	
1949-50	54·68	26,09,386*	75,04,690	1,01,14,076*	9,07,025	1,20,661	1·19
1950-1	54·68	27,91,616*	86,95,018	1,14,86,634*	8,35,292	36,189	0·32
1951-2	54·68	26,72,613*	86,43,807	1,13,16,420*	9,24,975	—1,18,363	—1·05
1952-3	54·68	26,83,445*	86,51,808	1,13,35,253*	7,89,422	—2,32,981	—2·06
1953-4	54·68	26,75,619*	86,54,903	1,13,30,522*	9,19,801	—3,34,522	—2·95
1954-5	56·05	27,06,424*	85,90,394	1,12,96,818*	5,42,234	—5,63,622	—4·99
1955-6	56·05	27,41,651	86,03,475	1,13,45,126*	5,60,686††	—6,01,389	—5·30
1956-7	56·05	27,41,015	86,04,324	1,13,45,339*	9,05,011††	—7,20,520	—6·35
1957-8	56·05	27,39,890	86,04,324	1,13,44,214*	10,79,576††	—2,87,293	—2·53
1958-9	56·05	27,51,420	86,25,921	1,13,77,341*	10,32,405@	—2,40,395	—2·11
1959-60	56·05	27,51,790	86,25,921	1,13,77,711*	11,40,816‡	—4,05,620	—3·57
1960-1	56·05	27,51,790	86,25,921	1,13,77,711*	10,17,040§	—5,88,142	—5·17
1961-2	56·05	27,54,038	86,25,921	11,39,959*	12,66,490**	—2,46,313	—2·16
1962-3	56·05	27,55,204	86,25,921	1,13,81,125*	14,07,654**	—4,05,181	—3·56
1963-4	56·05	27,65,639	86,25,921	1,13,91,560*	20,27,093**	+1,53,895	1·35

Year	Total charges against net earnings as per clauses 7 & 8 of the agreement: Interest on Capital outlay by Northern Rly. vide Col. 3 (*a*).	1% on Northern Rly Capital on account of contribution to Central Govt.	Hire of rolling stock @ 8% of the gross earnings	Total	Amount of interest on Pb. Govt. Capital plus share of surplus Paid to Pb. Govt.	Gain or loss to Rly. for each year (gain+, loss—)	Earnings per route kilometre per week	Proportion of expenditure to earnings
	7(*a*)	7(*b*)	7(*c*)	7(*d*)	8	9	10	11
	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	Rs.	
1949-50	87,783	26,094	72,562	1,86,439	Nil	—65,778	511·9	94·70
1950-1	85,336	27,916	66,823	1,80,075	,,	—1,43,886	471·4	103·67
1951-2	85,242	26,726	73,998	1,85,966	,,	—3,04,329	520·6	120·80
1952-3	83,287	26,834	63,154	1,73,275	,,	—4,06,256	445·5	137·51
1953-4	84,137	26,756	73,584	1,84,477	,,	—5,18,999	519·1	144·37
1954-5	85,844	27,064	43,279	1,56,187	,,	—7,19,809	306·0	211·93
1955-6	88,531	27,416	44,855	1,60,802	..	—7,62,191	328·4	215·26
1956-7	90,190	27,410	72,401	1,90,001	..	—9,10,521	609·9	170·61
1957-8	92,079	27,399	1,07,962	2,27,440	..	—5,14,733	594·4	126·61
1958-9	94,725	27,514	95,328	2,17,567	Nil	—4,57,962	355·4	132·52
1959-60	97,682	27,518	1,06,511	2,31,711	Nil	—6,37,331	389·3	144·89
1960-1	98,239	27,518	92,769	2,18,526	Nil	—8,06,668	348·0	166·95
1961-2	78,279	27,529	1,15,318	2,41,126	..	—4,87,439	433·34	128·55
1962-3	1,00,819	27,546	1,15,294	2,43,659	..	—6,48,840	481·64	136·97
1963-4	1,03,515	27,604	1,76,870	3,07,989	..	—1,54,094	691·70	101·13

NOTE—Expenditure for the purpose of working out percentage (Col. 11) also includes hire of rolling stock (Col. 7c).

*Includes Capital outlay viz. Rs. 25,00,895 upto 14-8-1947.

**Excludes earnings on account of 25 per cent of gross earnings of Surajpur-Sirhind section for cement booked for the Punjab Government.

††Excludes Rs. 2,69,954 on account of 25 per cent Gross Earnings of Surajpur Sirhind Section for Cement Booked for the project from Surajpur for the Punjab Govt. *vide* Clause 6 of the agreement.

@Excludes Rs. 1,59,195 on account of 25% Gross earnings of Surajpur Sirhind section for cement booked for the project from Surajpur for the Punjab Govt. *vide* Clause 6 of the Agreement.

‡Excludes Rs. 1,90,567 on account of 25% Gross Earnings of Surajpur Sirhind section for cement booked for the Project from Surajpur for the Punjab Govt. *vide* Clause 6 of the Agreement.

§Excludes Rs. 1,42,577 on account of 25% Gross Earnings of Surajpur Sirhind section for cement booked for the Project from Surajpur for the Punjab Govt. *vide* Clause 6 of the Agreement.

NORTHERN RAILWAY SYSTEM—contd.

(*iii*) NORTHERN RAILWAY (METRE GAUGE—1·000 METRE)

This is an amalgamation of the Jodhpur (exclusive of Marwar-Phulad Section), Bikaner State Railways and the Delhi-Rewari-Fazilka Section of the B. B. & C. I. Railway regarding which detailed remarks are given at the commencement of this Chapter.

PROGRESS IN OPENING

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Bikaner Division					
Main line—					
Delhi to Rewari	14-2-1873	84·09			
Portion of Main line Sadulpur-Rewari Chord in Rewari Station yard	27-2-1941	0·38	84.47		
Rewari to Mahindergarh	1-3-1941	49·50			
Mahindergarh to Loharu	23-2-1939	40·94			
Loharu to Sadulpur	11-12-1938	49·89	140·33		
Sadulpur to Churu	8-7-1911	57·94	57·94		
Bikaner-Ratangarh Chord—					
Ratangarh to Bikaner	24-11-1912	136·75	136·75		
Hissar extension—					
Churu to Ratangarh	22-5-1910	42·82	42·82		
Marwar Frontier to Bikaner	9-12-1891	5·05			
Branch Lines—					
Bikaner to Dulmera	2-6-1898	67·59			
Dulmera to Suratgarh	1-1-1901	115·63			
Suratgarh to Bhatinda	9-9-1902	141·63	329·90		
Hissar extension—					
Sadulpur to Hissar	8-7-1911	69·78	69·78		
Kolayat extension—					
Lalgarh to Kolayat	30-10-1922	46·53	46·53		
Canal Loop Line—					
Hanumangarh to Sadulshahr	26-4-1923	37·66			
Sadulshahr to Sri Ganga Nagar	1-8-1923	29·84			
Suratgarh to Raisinghnagar	1-10-1925	56·70			
Sri Ganga Nagar to Kesrisinghpur	1-5-1926	24·56			
Kesrisinghpur to Raisinghnagar	1-9-1927	54·68	203·44		
Sardarshahr extension—					
Hudera (3·22 kilometres from Ratangarh) to Sardarshahr	1-3-1916	43·92	43·92		
Hanumangarh Jn.—Sadulpur—					
Hanumangarh to Nohar	15-9-1927	73·64			
Nohar to Tahsil Bhadra	16-9-1928	40·39			
Tahsil Bhadra to Suratpura	13-11-1930	58·87	172·90		
Anupgarh Branch—					
Sarupsar to Anupgarh	30-3-1929	56·78	56·78		
Rewari–Fazilka Section—					
Rewari to Hissar	20-3-1883	141·94			
Hissar to Sirsa	1-1-1884	81·67			
Sirsa to Kot Kapura	1-10-1884	117·87			
Kot Kapura to Fazilka	1-1-1885	80·89	422·37		
Garhi Harsaru–Farukhnagar	14-2-1873	12·30	12·30		
Increase due to remeasurement		3·33	3·33		
TOTAL OPEN KILOMETRAGE BIKANER DIVISION	..			1,823·56	
Jodhpur Division					
Main line—					
Kuchaman Road to Merta Road	13-3-1893	117·10			
Merta Road to Jodhpur	8-4-1891	103·33			
Jodhpur to Luni Junction	9-3-1885	31·97			
Luni Junction to Balotra	22-3-1887	80·74			
Balotra to Barmer	15-5-1899	96·16			
Barmer to the Marwar Frontier	22-12-1900	120·97	550·27		

NORTHERN RAILWAY SYSTEM—*contd.*

(*iii*) NORTHERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

PROGRESS IN OPENING—*concld.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward Jodhpur Div.			550·27	1,823·56	
Main line—					
Marwar Railway Junction extension—					
Luni Junction to Marwar Pali	17-6-1884	40·91			@2·09 kilometres transferred to Western Railway in Marwar Junction from 15-12-1956.
Marwar Pali to Marwar Railway Junction@	24-6-1882	28·02	68·93		
Branches and extensions—					
Pachpadra branch—					*Owing to realignment of Balotra to Pachpadra Salt line *via* Pachpadra City, the old line Balotra to Pachpadra 16·09 kilometres originally opened on 22-3-1887 was dismantled on 11-4-1940.
*Balotra to Pachpadra City	1-10-1939	10·86			
Pachpadra City to Pachpadra Salt	11-4-1940	12·52	23·38		
Tilwara to Tilwara Fair	28-1-1929	2·35	2·35		
Phalodi branch—					
Jodhpur to Osian	21-9-1913	62·36			
Osian to Marwar Lohawat	17-3-1914	43·76			
Marwar Lohawat to Phalodi	12-5-1914	28·47			**The realignment of the line "Marwar Mathania-Osian via Tinwari" resulted in a net increase of the line by 6·92 kilometres. The realignment was opened on 15 December 1949.
Phalodi to Pokaran	27-7-1940	57·00	**191·59		
Merta City branch—					
Merta Road to Merta city	18-1-1905	14·65	14·65		
Bhagu extension—					
Merta Road to Nagaur	16-10-1891	56·62			
Nagaur to Chilo	9-12-1891	39·62			
Chilo to Bikaner	9-12-1891	71·52	96·24		†Owing to realignment of the line Sanvrad Sujangarh *via* Ladnun, the Jaswantgarh-Ladnun branch was dismantled resulting in a net decrease of the line by 2·33 kilometres. The realignment was opened on 1 May 1932.
Sujangarh to Ratangarh	2-2-1910	45·97	71·52		
Marwar frontier to Sujangarh	16-9-1909	2·28	48·25		
Marwar Frontier extension—					
†Degana to Marwar Frontier	16-9-1909	105·28	105·28		
Sursagar Branch—					
Jodhpur to Sursagar stone siding	15-3-1924	16·44	16·44§§		
Bilara Branch —					
‡Pipar Road to Bilara	2-8-1928	41·68	41·68		§§1·36 kilometres (i.e. increase from 15·08 to 16.44 kilometres) are due to change of centre line of Bhagat-ki-kothi Station, realignment of curve and track in Bhagat-ki-kothi-Fedusar quarry line.
Parbatsar Branch—					
Makrana to Parbatsar	1-8-1928	21·05	21·05		
Raniwara Branch—					
Samdari to Mokalsar	1-2-1929	26·13			
Mokalsar to Jalor	15-3-1929	32·89			‡This line was originally on the 0·67 metre gauge but was converted to and opened on the 1·000 metre gauge on the date shown.
Jalor to Marwar Bhinmal	1-5-1930	62·36			
Marwar Bhinmal to Raniwara	1-3-1931	31·88	153·26		
Raniwara to Bhiladi	1-10-1958	68·96	68·96		Taken over from Western Railway.
Increase in remeasurement		0·11	0·11		
TOTAL OPEN KILOMETRAGE JODHPUR DIVISION				1,473·96	
Allahabad Division					
Kanpur yard	§1-4-1899	0·13	0·13	0·13	§N. E. Rly. track maintained by N. Rly. out of 3·06 kilometres handed over N. E. Railway.
Total open Kilometre Northern Railway (metre gauge—1·000 metre)				3,297·65	
Double Line (M.G.)—					
Delhi–Rewari	25-12-1902	4·68			
Delhi Sarai Rohilla					
Delhi-Sarai Rohilla-Palam (Doubling)	24-3-1958	13·36			††3·09 kilometres doubling was done in Station yard Palam, Bijwasan and Garhi Harsaru, which was not done when the double line track from Palam to Garhi Harsaru was opened for traffic on 15-2-1959 and 1-3-1959
Palam Bijwasan (Doubling)	15-2-1959				
Bijwasan Garhi Harsaru (Doubling)	1-3-1959	23·27††			
Khalilpur Rewari	30-12-1959	10·80	52·11	52·11	

NORTHERN RAILWAY SYSTEM—contd.

(*iii*) NORTHERN RAILWAY (METRE GAUGE—1·000 METRE)—*concld.*

DETAILS OF CONSTRUCTION

(*a*) *Bikaner Division*

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs/yard) R, 37·13 kilograms/metre (75 lbs/yard) M.S., 24·80 kilograms/metre (50 lbs/yard), 24·80 kilograms/metre (50 lbs/yard) R, 24·80 kilograms/metre (50 lbs/yard) N.S., 29·76 kilograms/metre (60 lbs/yards) R, 33·02 kilograms/metre (66¼ lbs/yard), 19·84 kilograms/metre (40 lbs/yard) JBR, 17·95 kilograms/metre (36 lbs/yard), 20·46 kilograms/metre (41¼ lbs/yard) 30·90 kilograms/metre (60 lbs/yard) and 29·76 kilograms/metre (60 lbs/yard) rails laid on chir, sal, deodar, steel trough and CST/9 sleepers.

Ballast—The main line is ballasted throughout with stone, and the branch lines are ballasted with stone, sand kankar and unballasted.

Fencing—The line is unfenced, except at certain stations.

Curves—The sharpest curve is of 10° i.e. 175 metre radius.

Gradient—On main line from Delhi to Bikaner Section ruling gradient between Delhi to Rattangarh is 1 in 150 and from Rattangarh to Bikaner is 1 in 200.

(*b*) *Nabha Section of the Sadulpur-Rewari Line*

Permanent way—The permanent way consists of fiat-footed rails 24·80 kilograms/metre (50 lbs/yard), laid on steel trough sleepers.

Ballast—Broken stone.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 582 metres radius.

Gradient—The ruling gradient is 1 in 200.

(*c*) *Jodhpur Division*

Permanent way—The permanent way consists of 29·76 kilograms/metre (60 lbs/yard) R, 29·76 kilograms/metre (60 lbs/yard) B.S.S., 29·76 kilograms/metre A.S.C.E., 24·80 kilograms/metre (50 lbs/yard) R., 24·80 kilograms/metre (50 lbs/yard) A, B and C type, 20·46 kilograms/metre (41¼ lbs/yard) and 17·95 kilograms/metre (36 lbs/yard) rails laid on wooden, steel trough, steel converted, steel clip, type and CST/9 sleepers.

Ballast—The whole of the main line and a considerable portion of the branch line are ballasted with markrana and sandari stone and the balance with sand Kankar.

Fencing—With the exception of a few stations the line is unfenced.

Curves—The sharpest curve is of 291 radius except on the Furdusor quarry branch line where it is 250 metres.

Gradients—The ruling gradient is 1 in 100 except on the Furdusor quarry branch line where the sharpest gradient is 1 in 50

CONTRACT AND RATES AND FARES—As noted under Northern Railway Broad Gauge.

STATISTICS OF WORKING—NORTHERN RAILWAY (METRE GAUGE—1·000 METRE)

Year	Route kilometrage open at the end of each year	Total Capital outlay, including suspense to end of each year i.e. outlay on (i) lines open & (ii) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay or capital-at-charge given in col. (3)	Payment to General Revenues	Gain or loss to the state pertaining to each year (Gain+, Loss—)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1952-3	3,228·90	†	†	†	†	†	†	†	†
1953-4	3,228·90	†	†	†	†	†	†	†	†
1954-5	3,228·90	11,08,73,000	5,29,84,396	33,97,385	3·06	43,63,000	—9,65,615	315	93·59
1955-6	3,228·90	12,18,04,000	6,20,65,861	32,77,187	2·69	46,53,000	—13,75,813	368	94·72
1956-7	3,226·81	14,79,06,000	6,70,21,435	14,01,180	0·95	53,96,000	—39,94,820	398	97·91
1957-8	3,226·81	17,16,78,000	7,86,80,094	45,36,104	2·64	63,91,680	—18,55,576	468	94·23
1958-9	3,296·29	19,27,97,000	7,29,38,090	45,85,973	2·38	72,89,500	—27,03,527	424	93·71
1959-60	3,296·29	20,16,69,000	8,10,49,160	72,66,692	3·60	78,89,308	—6,22,616	470	91·03
1960-1	3,296·29	20,39,75,447	8,49,66,556	45,84,989	2·25	81,12,878	—35,27,889	494	94·60
1961-62									
Commercial	3,296·29	20,96,81,231	8,87,27,207	18,30,970	0·87	1,18,07,515*	—99,76,545	516	97·93
Strategic	..	..	..	..	..	..	..	..	..
1962-63									
Commercial	3,297·65	21,80,56,342	10,23,92,671	85,71,992	3·93	1,22,88,519*	—37,16,527	595	91·62
Strategic	..	..	..	..	..	..	..	..	..
1963-64									
Commercial	3,297·65	25,45,24,173	11,34,26,177	1,22,27,765	4·80	1,36,12,454*	—13,84,689	658	89·24
Strategic	..	..	..	..	..	..	..	..	..

*The figures of payment to General Revenues represent dividend only upto the year 1960-61. For the years 1961-62 to 1963-64, these figures are, however, inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 30,19,811, Rs. 30,21,125 and Rs. 29,79,392 for the years 1961-62, 1962-63 and 1963-64 respectively.

†Included in table A under broad gauge. Separate gauge-wise figures were not recorded.

NORTHERN RAILWAY SYSTEM—concld.

(iv) NORTHERN RAILWAY (NARROW GAUGE—0·762 METRE)

PROGRESS IN OPENING

Sections of Railway	Date of opening	Kilometres	Total
1	2	3	4
Kalka-Simla Section—			
Kalka to Simla Station	9-11-1903	95·68	
Simla station to old Bullock-Train Office	27-6-1909	0·77	
Total Kalka-Simla Railway			96·45
Kangra Valley Section—			
Pathankot to Nagrota	1-12-1928*	109·44	
Nagrota to Joginder Nagar	15-4-1954†	54·55	
Total Kangra Valley Railway			163·99
Total open kilometrage (0·762 Metre Gauge)			260·44

*For goods traffic.

†The line was originally opened on 1-4-1929 but was dismantled in April 1942. It has been restored on the date now shown.

DETAILS OF CONSTRUCTION

Kalka-Simla Section

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs./yard) NE, 30·90 kilograms/metre (62 lbs. yard) FF, 29·76 kilograms/metre (60 lbs/yard) R, 29·76 kilograms/metre (60 lbs/yard)BSS and 29·76 kilograms/metre (60 lbs/ yard) FF rails laid on steel trough, sal and soft wood sleepers with bearing plates.

Ballast—The line is ballasted with stone.

Fencing—The line is fenced only along the Kalka camping ground and through the outskirts of the town of Kalka and about a kilometre in Simla.

Curve—The sharpest curve is of 101 metres radius.

Gradients—The ruling gradient is 1 in 33 uncompensated.

Kangra Valley Section

Permanent way—The permanent way consists of 30·90 kilograms/metre (62 lbs/yard) FF, 30·40 kilograms/metres (61 lbs/yard) FF, 30·16 kilograms/metre (60½ lbs/yard) FF, 29·76 kilograms/metre (60 lbs/yard), 37·13 kilograms/metre (75lbs/yard) 10·10 metre (75/4") flange, 29·16 kilograms/metre (58½ lbs./yard) and 29·76 kilograms/metre (60 lbs/yard) R rails laid on sal, treated chir, deodar B.G. cuts.

Ballast—The section is ballasted throughout with stone.

Fencing—The line is unfenced.

Curve—The sharpest curve 14° (106 metres radius).

Gradients—The steepest gradient from Pathankot to Nagrota is 1 in 40 and from Nagrota to Jogindernagar is 1 in 25.

STATISTICS OF WORKING—NORTHERN RAILWAY (NARROW GAUGE—0·762 METRE)

Year	Route kilometrage open at end of each year	Total Capital outlay including suspense to end of each year i.e. outlay on (i) lines open and (ii) lines partly or wholly open & under construction	Gross earnings	Net earnings	Percentage of earnings on total capital outlay or capital at charge given in Col.(3)	Payment to General Revenues	Gain or Loss to the State pertaining to each year (Gain+, Loss—)	Earning per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1952-3	205·88		*	*	*	*	*	*	
1953-4	205·88		*	*	*	*	*	*	
1954-5	260·69	4,87,05,000	38,60,253	—29,67,000	—6·09	19,30,000	—48,97,000	284	176·86
1955-6	260·44	4,88,34,000	39,12,473	—40,71,565	—8·34	19,51,000	—60,22,565	287	204·06
1956-7	260·44	4,93,43,000	40,47,026	—52,50,710	—10·64	19,63,000	—72,13,710	298	229·74
1957-8	260·44	5,14,51,000	42,62,139	—44,74,510	—8·70	20,15,880	—64,90,390	314	204·98
1958-9	260·44	5,26,33,000	42,45,110	—56,10,347	—10·66	20,81,680	—76,92,027	313	232·16
1959-60	260·44	5,17,86,000	45,85,870	—43,51,241	—8·40	20,88,387	—64,39,628	337	194·88
1960-61	260·44	5,03,13,636	46,90,548	—46,85,481	—9·31	20,41,999	—67,27,480	345	199·89
1961-62									
Commercial	260·44	5,03,56,081	49,64,436	—61,48,765	—12·21	23,15,672†	—84,64,437	366	223·85
Strategic	..	..	..	..	..	..	..	..	..
1962-63									
Commercial	260·44	5,17,12,472	58,20,592	—36,25,901	—7·01	23,45,631†	—59,71,532	429	162·29
Strategic	..	..	..	..	..	..	..	..	..
1963-64									
Commercial	260·44	5,31,50,434	63,91,140	—30,61,123	—5·76	25,37,125†	—55,98,248	469	147·89
Strategic	..	..	..	..	..	..	..	..	..

*Included in Table A under broad gauge. Separate gaugewise figures were not recorded.

†The figures of payment to General Revenues represent dividend only upto the year 1960-61. For the years 1961-62 to 1963-64, these figures are however, inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 1,76,355, Rs. 1,76,674 and Rs. 1,77,710 for the years 1961-62, 1962-63 and 1963-64, respectively.

CHAPTER V

NORTH EASTERN RAILWAY SYSTEM

HEADQUARTERS—Gorakhpur.

PRESENT SYSTEM—The old North Eastern Railway was formed on 14th April 1952 by regrouping into a single unified system, two entire railway systems and a portion of the former Bombay, Baroda and Central India Railway. These were—

(a) The Oudh Tirhut Railway (metre gauge —1·000 metre),

(b) the Assam Railway (including the Cooch Behar State Railway) and the Katakhal Lala Bazar and Chaparmukh-Silghat worked by the Assam Railway (metre gauge—1·000 metre) and (narrow gauge—0·610 metre), and

(c) the Fatehgarh District, *i.e.*, Kanpur-Anwarganj to Achnera (excluded) of the Bombay, Baroda and Central India Railway (metre gauge—1·000 metre).

The Tezpore-Balipara Light Railway, a narrow gauge (0·762 metre) line of 32·35 kilometre length, owned and operated by the Tezpore-Balipara Tramway Company Limited, was taken over by the State from 1st September 1952 and added on to the North Eastern Railway. A portion of this narrow gauge system from Tezpore to Rangapara North a distance of 26·67 kilometres was converted into Metre Gauge in April 1953.

With effect from 15th January 1958, the North Eastern Railway was bifurcated into two zones. The ex-Pandu Region with the exception of a few Branch lines has been formed into a separate independent unit called the Northeast Frontier Railway with Headquarters at Pandu. The remaining portions of the old North Eastern Railway have been constituted into the present North Eastern Railway with Headquarters at Gorakhpur.

Administrative set up—The North Eastern Railway Administration is headed by the General Manager who is assisted by the Heads of Departments, viz., Chief Commercial Superintendent, Chief Electrical Engineer, Chief Enginer, Chief Mechanical Engineer, Chief Medical Officer, Chief Operating Superintendent, Chief Personnel Officer, Chief Security Officer, Chief Signalling and Tele-communication Engineer, Controller of Stores and Financial Adviser and Chief Accounts Officer. The Railway is administered on the district pattern, in which the District Officers are responsible direct to the Heads of Departments at the headquarters.

HISTORY

(a) *Oudh Tirhut Railway*—The Oudh Tirhut Railway, the largest of the constituent units of the North Eastern Railway, came into existence on 1st January 1943 when the lines owned by the late Bengal and North Western Railway, and Rohilkund and Kumaon Railway Companies were acquired by the State and together with the Tirhut Railway and Mashrak-Thawe Extension (formerly managed by the Bengal and North Western Railway Company on behalf of the State) and Lucknow Bareilly Railway (formerly managed by the Rohilkund and Kumaon Railway Company on behalf of the State) were amalgamated as one State Railway system under the name of Oudh and Tirhut Railway later changed to Oudh Tirhut Railway.

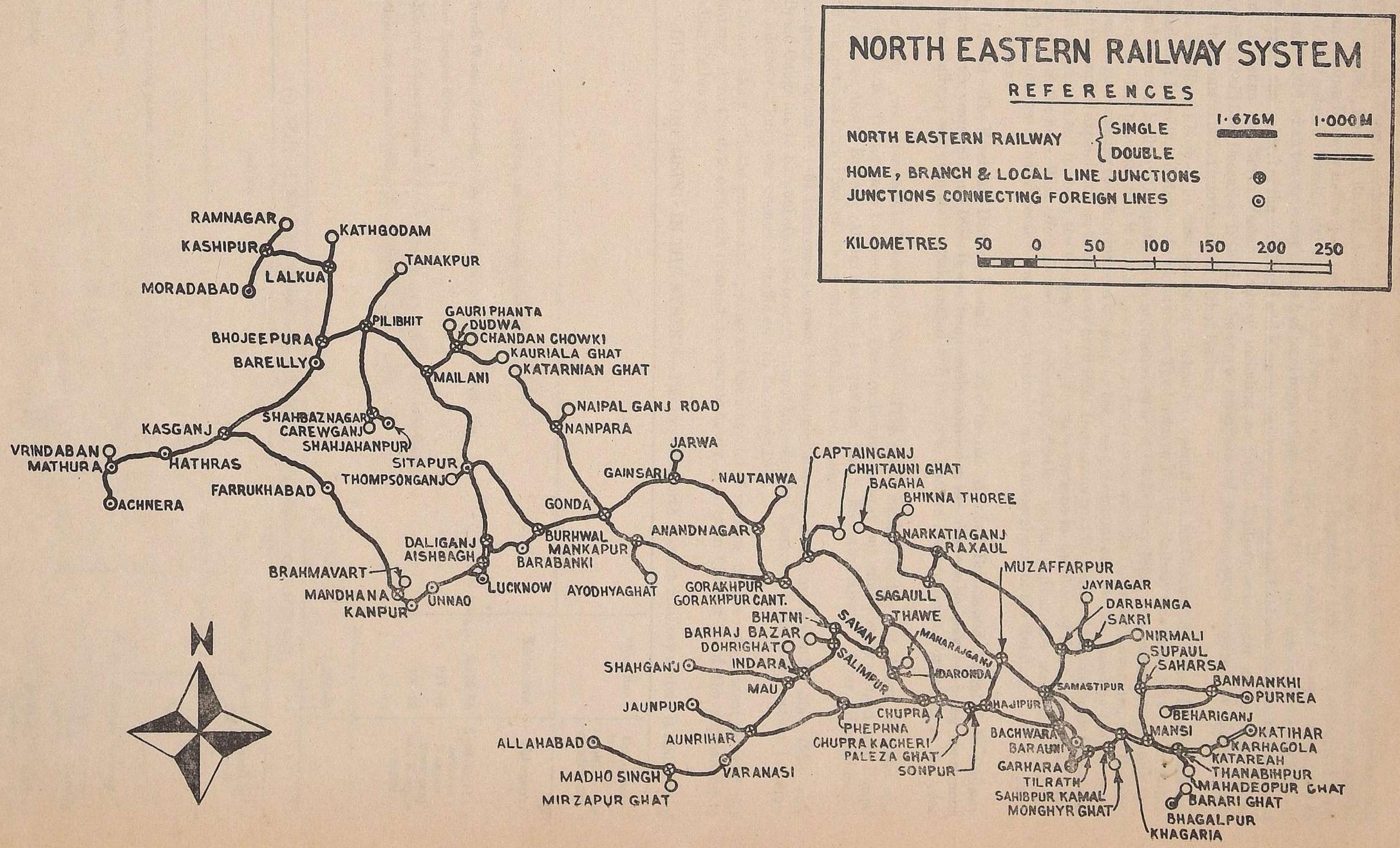
Among the companies working railways in India, the Bengal and North Western was unique as a private railway undertaking. It never enjoyed the guarantee terms and, except for the grant of land free of cost, no other aid was received from Government.

The Tirhut and Lucknow-Bareilly Railways were the property of the State but they were worked under a contract respectively by the Bengal and North Western Railway and Rohilkund and Kumaon Railway Companies.

(i) *Tirhut Railway*—The oldest line in this group is the Tirhut Railway which was started on 1st November 1875 by the State as a famine relief work with the opening of the section from Dalsingsarai to Darbhanga *via* Samastipur. Further extensions progressively carried out in the Tirhut Division of North Bihar increased by 1890 the operated route kilometre to 491, which connected all the principal towns in the area. On 1st July 1890, the Tirhut Railway was transferred to the management of the Bengal and North Western Railway Company and in course of time this line, which had been working at a loss, became a paying concern. The expansion of this Railway continued, until by the end of 1942, it had a total route kilometrage of 1,262. The main wagon ferry is located at Mokamehghat in this section. Another important extension namely, the Mashrak-Thawe Extension of 63·28 kilometres on behalf of the State, was opened on 12th January 1931.

(ii) *Bengal and North Western Railway*—The most important unit composing the Oudh Tirhut Railway was, however, the Bengal and North Western Railway. The company was constituted on 23rd October 1882 and the first section from Nawabganj to Bahraich *via* Mankapur and Gonda, a distance of 109 kilometres, was opened on 2nd April 1884. The original contract was entered into on 12th December 1882 and was to run for 99 years, *i.e.*, until 31st December 1981, the Government retaining the right to determine the contract on 31st December 1932, on one year's previous notice of the Government's intention to purchase on payment of money fixed under the terms of the contract. The duration of the contract was extended in the year 1932 upto the end of year 1937. The lines constructed by the Company were to serve the eastern districts of the U. P. and the western districts of Bihar. By July 1890, the total route kilometrage of 610 had been constructed and opened connecting Palezaghat (Patna) with Lakarmandi (Ajodhiya) and Bahraich and Naipalganj Road (Nepal) *via* Sonepore, Chupra, Savan, Gorakhpur, and Mankapur. Other constructions were taken in hand from time to time and at the time of acquisition by Government, the route kilometrage had totalled 2,042 kilometres.

(iii) *Rohilkund and Kumaon Railway*—The Rohilkund and Kumaon Railway Company started construction and working of a railway from Bhojeepura and Kathgodam under a contract dated 12th October 1882. This was the main line, 86·78 kilometres in length sanctioned in 1882 and opened on 12th October 1884. The company was guaranteed interest at 4 per cent during construction and received for 10 years thereafter a subsidy of Rs. 20,000 half yearly which ceased on 31st December 1894.



NORTH EASTERN RAILWAY SYSTEM
REFERENCES
NORTH EASTERN RAILWAY
SINGLE
DOUBLE
1·676M
1·000M
HOME, BRANCH & LOCAL LINE JUNCTIONS
JUNCTIONS CONNECTING FOREIGN LINES
KILOMETRES 50 0 50 100 150 200 250
N
RAMNAGAR
KATHGODAM
KASHIPUR
LALKUA
MORADABAD
TANAKPUR
PILIBHIT
BHOJEEPURA
BAREILLY
GAURI PHANTA
DUDWA
CHANDAN CHOWKI
KAURIALA GHAT
KATARNIAN GHAT
MAILANI
NAIPAL GANJ ROAD
NANPARA
SHAHBAZNAGAR
CAREWGANJ
SHAHJAHANPUR
KASGANJ
VRINDABAN
MATHURA
HATHRAS
ACHNERA
FARRUKHABAD
SITAPUR
THOMPSONGANJ
JARWA
GAINSARI
NAUTANWA
GONDA
BURHWAL
MANKAPUR
ANANDNAGAR
DALIGANJ
AISHBAGH
BARABANKI
BRAHMAVART
MANDHANA
KANPUR
UNNAO
LUCKNOW
AYODHYAGHAT
GORAKHPUR
GORAKHPUR CANT.
CAPTAINGANJ
CHHITAUNI GHAT
BAGAHA
BHIKNA THOREE
NARKATIAGANJ
RAXAUL
MUZAFFARPUR
SAGAULI
THAWE
BHATNI
SAVAN
BARHAJ BAZAR
DOHRIGHAT
SALIMPUR
MAHARAJGANJ
DARONDA
SHAHGANJ
INDARA
MAU
JAUNPUR
CHUPRA
HAJIPUR
PHEPHNA
CHUPRA KACHERI
PALEZA GHAT
SONPUR
AUNRIHAR
ALLAHABAD
VARANASI
MADHO SINGH
MIRZAPUR GHAT
JAYNAGAR
DARBHANGA
SAKRI
NIRMALI
SUPAUL
SAHARSA
SAMASTIPUR
BANMANKHI
PURNEA
BEHARIGANJ
MANSI
KATIHAR
KARHAGOLA
KATAREAH
THANABIHPUR
MAHADEOPUR GHAT
BARARI GHAT
BHAGALPUR
KHAGARIA
BACHWARA
BARAUNI
GARHARA
TILRATH
SAHIBPUR KAMAL
MONGHYR GHAT

NORTH EASTERN RAILWAY SYSTEM—contd.

The Bareilly-Kasganj section, 102·92 kilometres, was opened in 1906 and thus opened the way to the hill resorts of Nainital, Bhowali, Ranikhet and Almora. The portion from Soron to Kasganj was taken over from the Rajputana Malwa Railway in the same year. Under a contract dated 8 September 1890, the working and completion of the Lucknow Bareilly Railway was transferred to the Company. The combined system continued to expand until 1916 when the company's lines had total route kilometrage of 416·37 and the State lines of 502·21.

For years, the control of the Rohilkund and Kumaon Railway including the Lucknow Bareilly Railway, and that of the Bengal and North Western Railway including the Tirhut Railway, was under single management. This continued till 31st December 1942 when the two company-owned systems were acquired by Government, prior to their consolidation into the Oudh Tirhut Railway.

(*iv*) *Lucknow Bareilly Railway*—The first section of this line was opened on 12th October 1884 when Bhojeepura was connected with Bareilly, a distance of 19 kilometres. The Lucknow Bareilly Railway was taken over by the Rohilkund and Kumaon Railway Company in an unfinished state on 1st January 1891. The contract regulating the working of this line provided that it should be worked in conjunction with the Company's own line. The Government besides guaranteeing the principal and interest, on the nominal amount of £ 160,000 raised by the Company also met the capital expenditure on the Railway until 1909. During the next 20 years, additional funds for capital expenditure were raised for both the Company's and the State sections in the form of debentures on the joint security of both the lines. With effect from 1st October 1929, further capital expenditure was financed by the State. The Lucknow-Bareilly Section was worked virtually as an integral part of the Rohilkund and Kumaon Railway system.

(*b*) *Fatehgarh District*—The Fatehgarh District, a small section of the old Bombay, Baroda and Central India Railway was constructed between the years 1875 and 1884. It was temporarily retained in the Western Railway, but being contiguous with the Oudh Tirhut Railway was ultimately amalgamated with the North Eastern Railway on its formation. in the year 1952.

(*c*) *Purnea-Murliganj and Banmankhi-Behariganj) Section*—This small section of the old Assam Railway was constructed in the year 1929. It originally belonged to ex-Eastern Bengal Railway but subsequently merged into Bengal and Assam Railway, Bengal Assam Railway, Assam Railway and the old North Eastern Railway. After bifurcation on 15th January 1958 this portion formed part of the present North Eastern Railway.

(*d*) The broad gauge section of 1·61 kilometres between Barauni and Roopnagar was opened on 2nd May, 1959 with the extension of Broad Gauge line to Barauni after the construction of Rajendra Pul. The entire broad gauge section, Barauni-Samastipur, 52·47 kilometres long, was opened to traffic on 7th February 1962.

The detailed history along with the progress of opening and the statistics of working of the constituent units of the North Eastern Railway, upto the date each unit retained its separate entity, is given in Chapter IV of the supplement to the History of Indian Railways.

LINES COMPRISING IN THE SYSTEM—The present North Eastern Railway system is made up of

	Open line	Under construction or sanctioned for construction
	Kilometres	Kilometres
BIFURCATED NORTH-EASTERN RAILWAY		
North Eastern Railway—		
(*i*) Bengal and North Western Zone—Mashrak-Thawe Extension and Tirhut Section	3,556·84	2·00 doubling between Kanpur Anwarganj and Kanpur Central
(*ii*) Rohilkund and Kumaon Section	917·45	
(*iii*) Fatehgarh-Kanpur-Achnera Section of the *Ex*-Bombay Baroda & Central India Railway	404·89	
(*iv*) Purnea-Murliganj and Banmankhi-Behari Ganj Section of *Ex*-Assam Railway	82·48	..
Total	4,961·66	..

(*i*) NORTH EASTERN RAILWAY (METRE GAUGE—1·000 METRE).

Sections	Kilometrage	Sections owned by the Railway
Running Powers—		
(*i*) Sections on which running powers are exercised by N. Eastern Railway—		
(*a*) Achnera-Agra Fort	26·20	Western Railway
(*b*) Ramganga Bridge	0·85	Northern Railway (Between Bareilly-Bamiana).
(*c*) Ramganga Bridge	0·79	Northern Railway (Between Goh-Kathargarh).
Sections on which running powers are exercised by Foreign Railways—		
(*a*) Purnea—Banmankhi Behariganj (N.F. Rly.)	63·57	North Eastern Rly.

NORTH EASTERN RAILWAY SYSTEM—contd.

(i) NORTH EASTERN RAILWAY (METRE GAUGE—1·000 METRE)—contd.

PROGRESS IN OPENING

Sections of Railway	Date of opening	Kilometre	Total	Grand Total	Remarks
1	2	3	4	5	6
Broad Gauge (1·676 metres)					
Jaunpur Branch					
Barauni-Rupnagar	2-5-1959	1·61			
Rupnagar-Samstipur	7-2-1962	50·86	52·47		
Total, North Eastern Railway (Broad Gauge—1·676 metres) Metre gauge (1·000 metre) Main Line—					
Chupra to Mankapur	15-1-1885	313·39			
Mankapur to Gonda	2-4-1884	27·94			
Gonda to Colonelganj	20-10-1891	28·79			
Colonelganj to Jarwal Rd.	1-1-1892	17·28			
Jarwal Rd. to Gograghat	18-12-1896	4·47			
Gograghat to Chowkaghat	24-12-1898	5·91			
Chowkaghat to Burhwal	24-11-1896	4·64			
Burhwal to Barabanki	24-11-1896	26·38†			†Taken over from E.I. Rly. on 16-9-1943.
Barabanki to Malhaur	24-11-1896	18·04			
Malhaur to Daliganj	24-11-1896	13·41‡			‡Taken over from E. I. Rly. on 15-8-1951
Aishbagh to kilometre 7,782·14 (between Aishbagh and Amausi)	25-4-1897				
Aishbagh to Kanpur	25-4-1897	66·90§	527·15		§Taken over from E.I. Rly. on 14-4-1947.
Branches and Extensions—					
Dighaghat Branch					
Sonepore to Palezaghat	15-1-1885	11·01	11·01		
Mashrak Branch—					
Chupra-Mashrak	23-3-1910	42·12	42·12		
Maharajganj Branch—					
Darunda-Maharajganj	1-4-1897	6·28	6·28		
Savan-Captainganj Branch—					
Savan-Thawe	1-4-1907	28·68			
Thawe-Thamkuhi Road	15-3-1913	36·37			
Thamkuhi Rd. Captainganj	26-4-1913	62·54	127·59		
Bagaha Branch—					
Gorakhpur-Chhitauni	7-2-1907	89·27*	89·27		*1·75 kilometres dismantled in 1962-63 and 2·03 kilometres dismantled in 1963-64.
Gorakhpur-Gonda Loop—					
Gorakhpur-Uska Bazar	15-12-1886	63·83			
Uska Bazar-Barhni	15-1-1905	49·70			
Barhni-Tulsipur	15-1-1906	38·69			
Tulsipur-Balrampur	1-6-1898	29·60			
Balrampur-Gonda	15-12-1896	39·20	221·02		
Pharenda Branch—					
Pharenda-Nautanwa	2-12-1925	40·65	40·65		
Jarwa Branch—					
Gainsari-Jarwa	12-4-1906	14·74	14·74		
Ayodhya Branch—					
Mankapur to Nawabganj Gonda	2-4-1884	21·70			
Nawabganj (GD) to Lakarmandi Br.	1-12-1884	9·66	31·36		
Naipalganj Road Branch—					
Gonda-Bahraich	2-4-1884	60·31			
Bahraich-Naipalganj Rd.	15-12-1886	55·47	115·78		
Katarnianghat Branch—					
Nanpara to Mihinpurwa	15-12-1896	23·80			
Mihinpurwa-Katarnianghat	25-3-1898	43·90	67·70		
Carried over				1,347·14	

NORTH EASTERN RAILWAY SYSTEM—contd.

(i) NORTH EASTERN RAILWAY (METRE GAUGE—1·000 METRE)—contd.

PROGRESS IN OPENING—contd.

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward				1,347·14	
Sitapur Branch—					
Burhwal-Sitapur	13-3-1911	94·81	94·81		
Chupra-Banaras—					
Allahabad Branch					
Chupra-Revelganj	15-4-1891	12·47			
Revelganj-Manjhi	1-4-1899	2·16			
Manjhi-Bakulha	7-2-1912	7·35			
Bakulha-Ballia	12-5-1899	43·21			
Ballia-Phepna	15-3-1894	10·07			
Phepna-Ghazipur Ghat	10-3-1903	51·53			
Ghazipur Ghat-Aunrihar	15-3-1894	43·26			
Aunrihar-Banaras	15-3-1899	31·98			
Banaras Cantt. Yard	..	†3·52			†Taken over from Northern Railway on 27-2-1953.
Banaras-Madho Singh	1-3-1909	46·03			
Madho Singh-Jhusi	21-4-1909	67·51			
Jhusi-Izat Bridge	1-11-1912	3·83			
Izat Bridge-Allahabad City	8-5-1913	3·69	326·61		
Mirzapur Ghat Extension—					
Madhosingh-Mirzapur Ghat (Ganges Gogra Doab Lines)	1-3-1909	10·86			
Mirzapur Ghat—Chill (Ganges Gogra Doab Lines)	25-10-1912	1·69	12·55		
Bhatni-Banaras Chord— Bhatni-Turtipar (Ganges Gogra Doab Lines)	15-12-1896	27·73			
Turtipar-Mau Jn. (Ganges Gogra Doab Lines)	8-6-1898	41·84			
Mau Jn.-Aunrihar (Ganges Gogra Doab Lines)	15-3-1899	57·63	127·20		
Barhaj Branch—					
Salimpur-Barhaj (Ganges Gogra Doab Lines)	1-12-1897	21·07	21·07		
Dohrighat Branch— Phephna-Indara (Ganges Gogra Doab Lines)	15-3-1899	50·52			
Indara-Dohrighat (Ganges Gogra Doab Lines)	21-3-1904	35·27	85·79		
Shahganj Branch— Mau-Azamgarh (Ganges Gogra Doab Lines)	8-6-1898	43.18			
Azamgarh-Shahganj (Ganges Gogra Doab Lines)	14-2-1903	56·25	99·43		
Jaunpur Branch— Aunrihar to Jaunpur (Ganges Gogra Doab Lines)	21-3-1904	58·81	58·81		
Tirhut Railway portion—Main Line—					
Hajipur-Bachhwara	1-4-1900	71·33			
Barauni Jn.-Khagaria	1-3-1900	57·07			
Kataroah-Kursela	10-7-1902	6·04			
Kursela Karagola Road	7-3-1901	15·11@	149·55		@20·02 kilometres decrease in single line during 1962-63 due to doubling between Karagda Road and Katihar and 0·29 kilometre decrease in 1963-64 due to handing over to Northeast Frontier Railway.
Branches and Extensions—					
Hajipur-Muzaffarpur	26-10-1884	53·82	53·82		
Semariaghat Extension—					
Barauni Jn.-Semariaghat	1-5-1883	*			*It had a total kilometrage of 22·27 and was dismantled on 2-5-1959.
Carried over				2,376·78	

NORTH EASTERN RAILWAY SYSTEM—contd.

(i) NORTH EASTERN RAILWAY (METRE GAUGE—1·000 METRE)—contd.

PROGRESS IN OPENING—contd.

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward				2,376·78	
Bachhwara-Bagaha Branch—					
Bachhwara-Dalsing Sarai	1-5-1883	10·20			
Tilrath-Garhara	17-6-1958	7 50			
Dalsing Sarai-Samastipur	1-11-1875	23·74			
Samastipur-Muzaffarpur	24-2-1877	50·69			
Muzaffarpur-Motihari	1-2-1883	80·50			
Motihari-Bettiah	20-12-1883	43·55			
Bettiah-Narkatiaganj	17-1-1906	36·34			
Narkatiaganj-Bagaha	1-5-1907	39·99			
Bagaha-Gandak Bridge	9-8-1912	0·48	292 99		
Hajipur Extension—					
Hajipur to Hajipurghat	26-10-1884	3·04	3 04		
Raxaul Branch—					
Sagauli-Raxaul	1-3-1909	28·76	28·76		
Samastipur-Darbhanga-Narkatiaganj Loops—					
Samastipur-Darbhanga	1-11-1875	37·21			
Darbhanga-Sitamarhi	1-7-1890	67·77			
Sitamarhi-Riga	1-1-1891	9·25			
Riga-Dhang	1-7-1891	11·27			
Dhang-Bairagnia	1-3-1892	8·59			
Bairagnia-Narkatiaganj	20-12-1907	95·50	229·59		
Bhikna Thoree Branch—					
Narkatiaganj-Bhikna Thoree	12-12-1906	35·61	35·61		
Darbhanga-Bhaptiahi Branch—					
Darbhanga Jhanjharpur	1-2-1883	38·08			
Jhanjharpur-Ghogardiha	8-4-1886	22·02			
Ghogardiha-Nirmoli	8-4-1886	10·04			
Nirmoli-Bhaptiahi	15-11-1887	§	70·14		§Not existing.
Jaynagar Branch—					
Sakri-Jaynagar	14-1-1905	48·60	48·60		
Bhaptiahi-Mansi Branch—					
Bhaptiahi-Simri Bakhtiyarpur	1-3-1907	44·32			
Simri Bakhtiyarpur-Mansi	15-12-1907	25·28	69·60		
Baijnathpur Branch—					
Saharsa-Baijnathpur	15-3-1908	8·88			
Baijnathpur-Dauram Madhepura	4-10-1918	12·97	21·85		
Dauram Madhepura-Murliganj	20-7-1954	21·61	21·61		
Monghyrghat-Branch—					
Sahebpur Kamal Jn-Monghyrghat	7-3-1900	9·66	9·66		
Bhagalpur Branch—					
Thana Bihpur-Mahadeopur Ghat	16-10-1901	16·10‡			
Mahadeopurghat-Bararighat (Steamer service)	..	..			‡The original kilometrage of 18·96 decreased to 16·10 in 1963-64 due to shifting of ghats at Mahadeoghat and Monghyrghat.
Bararighat-Bhagalpur Ky.	15-3-1906	5·63			
Bhagalpur Ky-Bhagalpur E.Ry. Station	23-12-1910	2·32			
Barari-Barrarighat	1-12-1918	3·27	27·32		
Carried over				3,235·55	

NORTH EASTERN RAILWAY SYSTEM—contd.

(i) NORTH EASTERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward				3,235·55	
Samastipur-Rusra-Khagaria Extension—					
Samastipur Rusraghat	21-12-1912	28·52			
Rusraghat-Hasanpur Rd.	7-5-1915	17·40			
Hasanpur Rd-Khagaria	1-11-1915	39·06	84·98		
Mashrak-Thawe Extension—					
Mashrak-Thawe	12-1-1931	63·28	63·28		
Rohilkund & Kumaon Rly.—Main Line—					
Bhojeepura to Kathgodam	12-10-1884	86·78	86·78		
Extensions—					
Kasganj Extension—					
Bareilly to Soron	29-1-1906	88·43			
Soron to Kasganj	4-1-1885	14·48	102·91		
Ramnagar Extension—					
Moradabad to Got	10-5-1908	6·74			
Got to Kashipur	11-1-1908	43·23			
Kashipur to Ramnagar	1-4-1907	27·58	77·55		
Kashipur Extension—					
Lalkuan-Kashipur	15-12-1907	57·94	57·94		
Shahjahanpur Extension—					
Pilibhit to Bisalpur	24-2-1911	37·24			
Bisalpur to Careweganj	13-1-1912	50·08			
Shahbaznagar to Shahjahanpur	18-3-1916	3·86	91·18		
Ex Lucknow-Bareilly Railway—					
Direct Link at Lucknow Junction for Kanpur	1-10-1952	0·32			
Lucknow to Sitapur (excluding Aishbagh to Daliganj taken against double Line)	15-11-1886	83·51*			*Decrease of 2·42 kilometres from the original kilometrage of 85·94 is due to doubling between Lucknow City to Daliganj.
Sitapur to Lakhimpur	15-4-1887	45·87			
Lakhimpur to Gola Gokarannath	15-12-1887	34·60			
Gola Gokarannath to Pilibhit	1-4-1891	92·62			
Pilibhit to Bhojeepura	15-11-1884	38·62			
Bhojeepura-Bareilly	12-10-1884	19·31	314·85		
Branches & Extensions—					
Bareilly Grain siding	1-4-1894	2·82	2·82		
Kuriala ghat Extension—					
Mailani to Sarda	1-1-1893				
Sarda to Sohela	10-3-1893	49·53			†The section Tanakpur to Barndeo was extended as per estimates sanctioned vide Railway Board's letter No. 878-E-16 dated 14-5-1919 and later dismantled as per Railway Board's letter No. 2149 dated 21-5-1926.
Sohela to Sonaripur	18-3-1894				
Sonaripur to Kurialaghat	2-1-1911	31·37	80·90		
Chandan Chowki Extension—					
Dudwa to Chandan Chowki	1-4-1903	12·18	12·18		
Gauri Phanta Extension—					
Dudwa to Gauri Phanta	15-4-1914	23·32	23·32		
Barndeo Extension—†					
Pilibhit to Barndeo	15-5-1912	62·02	62·02		
Carried over				4,296·26	

NORTH EASTERN RAILWAY SYSTEM—contd.

(i) NORTH EASTERN RAILWAY (METRE GAUGE—1·000 METRE)—contd.

PROGRESS IN OPENING—concld.

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward				4,296·26	
Ex. B. B. & C. I. Rly. portion (Fatehgarh District)					
Kanpur-Achnera Section—					
Main line—					
Kanpur to Kanauj	15-12-1880	79·18			
Kanauj to Farukhabad	1-2-1881	59·03			
Farukhabad to Kasganj	14-4-1884	107·47			
Kasganj to Hathras Rd.	1-7-1884	54·78			
Hathras Rd. to Mathura Cantt.	19-10-1875	46·85			
Jumna Bridge	1-7-1884	1·61			
Mathura Cantt. to old connection Mathura Junction.	11-11-1907	3·73			
Old connection to Achnera (Excluding Achnera)	7-11-1881	32·83	385·53		
Branches—					
Brahmavart Branch	10-11-1885	7·69			
Brindavan Branch	26-8-1889	11·67	19·36		
Murliganj and Behariganj Branches—					
Purnea to Murliganj	20-3-1929	55·38			
Banmankhi to Beharigauj	1-8-1929	27·10	82·48*		*Taken over by N.E. Rly. from N.F. Rly. on 26-3-58 after bifurcation.
Total North Eastern Rly. (1·000 Metre Gauge)				4,783·63	
Double Lines—1·000 (Metre Gauge)					
Lucknow-Katihar—					
Main Line—					
1. Aish Bagh to Lucknow City	15-11-1886	5·00§			§Increase of 2·43 kilometres, from 2·57 kilometres, in double line between Aishbagh and Daliganj opened on the 26th December 1961 and shown against double line.
2. Hajipur to Chupra	15-1-1885	58·93†			†5·39 kilometres taken as double line between Sonepur of Hajipur from 14th November 1960.
3. Barauni Jn. to Bachhwara	1-5-1883	16·17			
4. Khagaria to Katareah	1-1-1901	77·91			
5. Karagola Road-Kalihar‡	..	20·02	178·03	178·03	‡Doubling between Karagola Road and Katihar during 1962-63.
Grand Total				4,961·66	

(B) Ex-Oudh Tirhut portion—

The main line is laid with 29·76 kilograms/metre (60 lbs/yard) R.B.S. and A.S.C.E. flat footed steel rails on wooden sleepers with the following exceptions:—

(a) 199·96 kilometres of the undernoted sections are laid with new 24·80 kilograms/metre (50 lbs/yard) R. B. S. steel rails renewed in place of old 24·80 kilograms/metre (50 lbs/yard) N. S. Rails.

	Kilometres
(i) Lakho-Barauni Jn.	22·53
(ii) Muzaffarpur Hazipur	53·11
(iii) Gonda-Daliganj	117·08
(iv) Daliganj-Lucknow Jn.	7·24
	199·96

(b) 937·85 kilometres of the undernoted sections are laid with 24.80 kilograms/metre (50 lbs/yard) N. S. steel rails:—

	Kilometres
(i) Collectorganj-Achnera	385·85
(ii) Sonepore-Chupra (Double line)	108·63
(iii) Lucknow-Kanpur	67·99
(iv) Lakhimpur Kheri-Bhojeepura	166·57
(v) Bhojeepura-Kasganj	121·91
(vi) Bhojeepura-Kathgodam	86·90
	937·85

NORTH EASTERN RAILWAY SYSTEM—contd.

(i) NORTH EASTERN RAILWAY (METRE GAUGE—1·000 METRE)—contd.

DETAILS OF CONSTRUCTIONS—contd.

The branch line sections are mainly laid with 24·80 kilograms/metre (50 lbs/yard) N.S. and B.S. steel rails on sal sleepers except the following sections which are laid with 20·46 kilograms/metre (41¼ lbs/yard) steel rails—

	Kilometres
(1) Sonepore-Palezaghat	6·04
(2) Sonepore-Banwarchak	9·66
(3) Narkati-Bhiknathoree	35·41
(4) Mansi-Supaul	68·40
(5) Saharsa-Dauram Madhepura	20·12
(6) Bararighat-Bhagalpur	8·05
(7) Sahebpur Kamal-Monghyrghat	5·23
(8) Barauni Jn.-Semariaghat	2·41
(9) Mandhana-Brahmavart	7·64
(10) Mathura Jn.-Brindavan	11·67
(11) Moradabad-Ramnagar	77·25
(12) Kashipur-Bazpur	20·12
(13) Izatnagar-Clutterbuckganj	7·08
(14) Izatnagar-Shahamatganj	2·82
(15) Pilibhit-Tanakpur	61·96
(16) Pilibhit-Shahjahanpur	83·28
(17) Shahbaznagar-Carewganj	7·64
(18) Mailani-Dudwa	42·65
(19) Dudwa-Chandanchowki	39·43
(20) Dudwa-Gauriphanta	23·34
(21) Nanpara-Katarnianghat	67·19
(22) Chowkaghat-Bahramghat	2·96
(23) Mankapur-Ajodhyaghat	29·77
(24) Gainsari-Jarwa	15·29
(25) Uskabazar-Gainsari	68·40
(26) Anandnagar-Nautanwa	40·23
(27) Salimpur-Barhajbazar	20·52
(28) Indara-Dohrighat	35·00
(29) Mau-Shahganj	98·96
(30) Aunrihar-Jaunpur	58·74
(31) Madhosingh-Chilh	12·06
(32) Daronda-Maharjganj	6·44
(33) Chupra-Thawe	107·83
	1,103·59

Ballast—

Ex-Oudh Tirhut Railway Section—The whole of the line except Bhiknathoree Branch is ballasted with broken brick ballast, or shingle mixed with broken stone ballast.

Ex-B.B. & C.I. Rly. Portion—Kanpur-Achnera Section—The line is ballasted throughout with stone, kunker and hard quartz.

Fencing—

Ex-Oudh Tirhut Railway Section—The following sections on the main line are fenced—

Main line—Khagaria to Burhwal.

Bachhwara-Samastipur-Muzaffarpur-Bettiah.

Samastipur-Darbhanga-Bairagnia.

Muzaffarpur-Hajipur, Samastipur-Hasanpur Road.

Chupra-Revelganj Ghat, Mohibullapur Lucknow Junction.

Kichha-Kathgodam, Dohna-Bareilly Junction Budaun to Sheikhupur.

Ex-B.B. & C.I. Rly. Portion—Kanpur-Achnera Section—Kanpur-Achnera Section, main line, 238·55 kilometres and Brindavan branch 4·33 kilometres are fenced.

Curves—

The sharpest curve on Ex-O.T. Railway is 274 metres radius (6°) and on Kanpur-Achnera Section (of Ex-B.B. & C.I. Railway) it is 218 metres (8°).

Gradients—

On the Ex. O.T.R. Section, the ruling gradient is 1 in 300, except near the Hills where it is 1 in 70. On the various river ghat lines the gradients are steeper. On the Kanpur Achnera section of Ex-B.B. & C.I. Rly. the ruling gradient is 1 in 150.

CONTRACTS—Nil. The line is owned and worked by the State.

RATES AND FARES—As fixed by the Central Government from time to time and subject to such powers as may be delegated to the Railway administration.

NORTH EASTERN RAILWAY SYSTEM—concld.

(*i*) NORTH EASTERN RAILWAY (METRE GAUGE—1·000 METRE)—*concld.*

DETAILS OF CONSTRUCTION—*concld.*

STATISTICS OF WORKING

Statistics prior to 1st April 1952 will be found separately for the constituent units in different tables relating to each one of them in the Supplement to the History of Indian Railways. Those given below in tables 'A' and 'B' refer to all the gauges of the North Eastern Railway system.

For the purpose of these statistics, the integration of North Eastern Railway has been assumed to have taken place on 1st April 1952 instead of 14th April 1952.

In comparing the fluctuations in the financial results, the following changes in accounting and financial structure of Railways effective during the two years 1952-3 and 1953-4 should be borne in mind—

(*i*) The earnings actually collected by a Zonal Railway either in cash or by book adjustment was taken in the accounts as the earnings of that Railway and no apportionment of earnings accruing from the traffic interchanged between the Indian Railways was made.

(*ii*) Inter-Railway adjustments were not made in respect of the expenditure on manufacture, repair and overhaul of rolling-stock at workshops of one Railway on behalf of another (except the independent manufacturing units like Chittaranjan Locomotive Works and the Integral Coach Factory etc.).

(*iii*) No inter-Railway adjustment was made in the financial accounts of freight charges for the carriage of Railway stores, fuel, etc., i.e., so far as the financial accounts are concerned these stores were carried free of charge.

The figures of gain/loss shown in tables of statistics of working do not include receipts from subsidised companies—Government share of surplus profits, railway miscellaneous receipts, miscellaneous Railway expenditure, expenditure on subsidised railways and expenditure relating to Open Line Works.

Table A—North Eastern Railway before bifurcation (all gauges combined)

Year	Route kilometrage open at end of each year	Total capital outlay, including suspense, to end of each year, i.e. outlay on (i) lines open & (ii) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Payment on account of rebate to branch lines	Payment to General Revenues	Gain or loss to the State pertaining to each year (Gain+, Loss—)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	
1952-3 .	7,603·14	84,04,53,451	22,96,47,380	—10,71,536	*	9,500	3,31,06,468	*	*	*
1953-4 .	7,603·14	86,82,03,284	22,78,69,186	—1,85,35,794	*	..	3,42,37,278	*	*	*
1954 5 .	7,624·75	93,28,84,701	23,48,36,546	—3,91,59,594	—4·20	9,486	3,60,25,816	—7,51,94,896	589	116·71
1955 6 .	7,733·62	1,01,70,74,022	24,87,78,056	—5,11,76,134	—5·97	10,615	3,82,49,053	—8,94,35,802	615	120·46
1956-7 .	7,722·12	1,20,09,25,104	29,45,46,533	—3,13,54,465	—2·61	..	4,42,37,126	—7,55,91,591	731	110·54
1957-8 .	7,727·80	1,30,53,60,022	33,12,10,442	—3,13,34,881	—2·40	..	4,83,72,381	—7,97,07,262	825	109·38

NOTE—The figures of capital-at-charge are provisional pending closing of prepartition accounts and the finalization of the balances of ex States' railways brought forward on 1 April 1950.

*These results have not been worked out, as the figures of gross earnings and working expenses as booked in individual Railway's accounts during the years 1952-3 and 1953-4 did not represent the true systemwise apportioned and adjusted figures, as stated above.

Table B—North Eastern Railway after bifurcation.

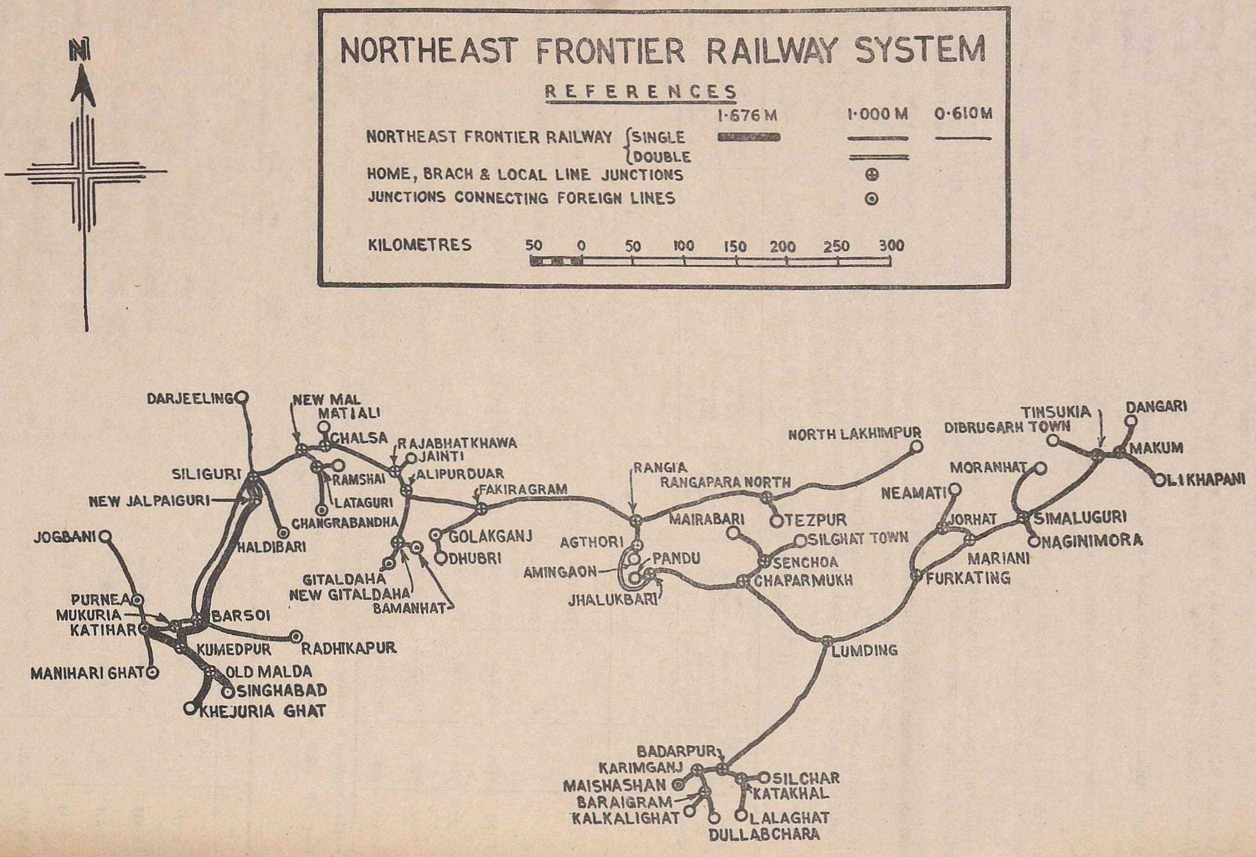
1	2	3	4	5	6	7	8	9	10	11
	Rs-	Rs.	Rs.	Rs-		Rs-	Rs.	Rs.	Rs.	
1958 9† .	4,960·43	77,66,30,517	18,87,55,189	—3,25,60,299	—4·18	..	2,96,33,339	—6,21,93,638	750	117·25
1959-60 .	4,952·47§	80,28,29,833	16,36,29,652	—6,97,66,340	—8·69	..	3,11,43,147	—10,09,09,487	665	142·64
1960-1 .	4,919·32§	83,47,00,311	20,81,17,427	—3,68,76,604	—4·42	..	3,37,33,787	—7,06,10,391	842	117·72
1961-62 .	4,968·54‡	84,36,99,680	23,68,15,082	—1,18,32,620	—1·40	..	4,38,81,777**	—5,57,14,397	953	105·00
1962-63 .	4,966·79‡	87,26,84,266	27,16,67,104	83,34,329	0·95	..	4,47,50,668**	—3,64,16,339	1,080	96·93
1963-64 .	4,961·66‡	93,11,44,743	29,61,16,988	1,84,76,858	1·98	..	4,91,36,357**	—3,06,59,499	1,177	93·76

**The figures of payment to General Revenues represent the amount of dividend only upto 1960-61. From 1961-62 to 1963-64 these figures are inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from 1st April 1961, the figures being Rs. 84,20,858, Rs. 85,85,404 and Rs. 89,18,520 for the years 1961-62 and 1962-63 and 1963-64 respectively.

†The figures for the year 1958-59 are for the metre gauge only as, consequent on the formation of the Northeast Frontier Railway on the 15th January 1958, the broad gauge (3·46 kilometres) and the narrow gauge (83·64 kilometres) lines were transferred to that Railway, besides the ex-Pandu region.

‡Includes 52·47 kilometres of broad guage.

§ Includes 1·61 kilometres for Broad Gauge.


NORTHEAST FRONTIER RAILWAY SYSTEM
REFERENCES
1·676 M
1·000 M
0·610 M
NORTHEAST FRONTIER RAILWAY {SINGLE
DOUBLE
HOME, BRACH & LOCAL LINE JUNCTIONS
JUNCTIONS CONNECTING FOREIGN LINES
KILOMETRES 50 0 50 100 150 200 250 300
N
DARJEELING
NEW MAL
MATIALI
CHALSA
RAJABHATKHAWA
JAINTI
ALIPURDUAR
SILIGURI
RAMSHAI
LATAGURI
NEW JALPAIGURI
CHANGRABANDHA
FAKIRAGRAM
HALDIBARI
JOGBANI
GOLAKGANJ
DHUBRI
GITALDAHA
NEW GITALDAHA
BAMANHAT
PURNEA
MUKURIA
KATIHAR
BARSOI
KUMEDPUR
RADHIKAPUR
MANIHARI GHAT
OLD MALDA
SINGHABAD
KHEJURIA GHAT
RANGIA
RANGAPARA NORTH
NORTH LAKHIMPUR
MAIRABARI
TEZPUR
AGTHORI
PANDU
AMINGAON
JHALUKBARI
SILGHAT TOWN
SENCHOA
CHAPARMUKH
LUMDING
TINSUKIA
DANGARI
DIBRUGARH TOWN
MAKUM
LIKHAPANI
MORANHAT
NEAMATI
JORHAT
SIMALUGURI
NAGINIMORA
MARIANI
FURKATING
BADARPUR
KARIMGANJ
MAISHASHAN
BARAIGRAM
KALKALIGHAT
SILCHAR
KATAKHAL
LALAGHAT
DULLABCHARA

CHAPTER VI

NORTHEAST FRONTIER RAILWAY

Head Quarters—Pandu.

Present System—The Northeast Frontier Railway was formed on 15th January, 1958 by bifurcating the North Eastern Railway and comprised of the following :—

The Assam Railway (including the Cooch Behar State Railway) and the Katakhal—Lalabazar and Chaparmukh—Silghat Railways worked by the Assam Railway.

The Tezpore—Balipara Light Railway a narrow gauge (0·762 metre) line of 32·35 kilometres in length, owned and operated by the Tezpore—Balipara Tramway company Limited, was taken over by the State from 1st September, 1952 and added to the composite North Eastern Railway. A portion of this narrow gauge system from Tezpore to Rangapara North a distance of 26·67 kilometres was converted into metre gauge in April, 1953. The narrow gauge section from Rangapara North to Balipara was abandoned from 30th April 1953.

Administrative set up—The Northeast Frontier Railway Administration is headed by the General Manager who is assisted by the Head of Departments, viz., Chief Commercial Superintendent, Chief Electrical Engineer, Chief Engineer, Chief Engineer (Broad Gauge) Construction Project, Chief Engineer (Survey and Construction), Chief Mechanical Engineer, Chief Medical Officer, Chief Operating Superintendent, Chief Personnel Officer, Chief Security Officer, Chief Signalling and Telecommunication Engineer, Controller of Stores, Financial Adviser and Chief Accounts Officer and Financial Adviser and Chief Accounts Officer (Construction). This Zone is at present administered on the district pattern in which District Officers are responsible direct to the heads of the Departments at the Railway's headquarters.

HISTORY

Assam Railway—The Assam Railway came into existence on 15th August 1947 on the partitioning of the Bengal Assam Railway when the portions of this system falling within Indian territory were reorganised into the Assam Railway, except in the case of the Sealdah Division and the Katihar District which it was found expedient to transfer to the East Indian Railway and the Oudh Tirhut Railway respectively. The Assam Railway had a route kilometrage of 2,729·44 kilometres major portion of which belonged to the old Assam Bengal Railway, a State-owned line worked under a contract by the guaranteed Assam Bengal Railway Company whose contract was determined on 31st December 1941 and the Assam Bengal Railway being taken over under direct Government management was amalgamated with the State-managed Eastern Bengal Railway with effect from 1st January 1942, under the name of "Bengal and Assam Railway," subsequently named the "Bengal Assam Railway".

The construction of the Assam Bengal Railway as a State line was sanctioned in May 1891. The Assam Bengal Railway Company was formed in 1892 and took over the works commenced by the State. The late Noakhali (Bengal) Railway which was worked by the old Assam Bengal Railway Company up to the end of 1905 was purchased by the Government and amalgamated with the Assam Bengal Railway from 1st January 1906.

The date of registration of the late Eastern Bengal Guaranteed Railway Company was 1857. The lines owned by the late Guaranteed Company were acquired by the State on 1 July 1884, with which the North Bengal State and the Calcutta and South Eastern Railways were amalgamated for working by the State as one undertaking under the name of the Eastern Bengal Railway. Major portion of the Eastern Bengal Railway is now in Pakistan.

The Bengal Dooars Railway owned by the Bengal Dooars Railway Company, which was constructed for opening out the Western Dooars and for the development of the tea industry, was amalgamated with the Eastern Bengal Railway system with effect from 1st January 1941 after its purchase by the Government, and largely formed parts of the Assam Railway.

The Dibru Sadiya Railway owned by the Assam Railways and Trading Company, and worked by the Company upto 31st March 1942, was purchased by the Government on 1st April 1945. Its operational control was already taken over by the Bengal and Assam Railway due to war emergency on 1st April 1943. The Jorhat Provincial Railway (a narrow gauge line of 0·610 metre) which was owned by the then Provincial Government but whose ownership vested in the Government of India on 1st April 1937, was also added to the Bengal Assam Railway on 1st October 1943, and a part of it was converted into metre gauge and part of it dismantled.

With the partition of India, the Bengal Assam Railway system had to be divided according to the political boundaries and as a result, the Assam Railway came into being on and from 15th August 1947, as aforesaid.

Since 1947, there have been other changes. The lines from Kishanganj to Siliguri Town, Siliguri North to Gish bridge (a point on the section Mal to Bagra Kote), Madar hat to Hasimara (a point on the section Raja Bhatkhawa to Dalsingpara) and Alipur Duar Jn (a new station on the section Gitaldaha to Jainti) to Fakiragram a station on the Golakganj-Amingaon Section), which were constructed by the Assam Rail Link Project were taken over by the Assam Railway on 9 December 1949.

The Darjeeling Himalayan Railway with extensions (narrow gauge—0·610 metre) owned by the Darjeeling Himalayan Railway company and the Darjeeling Himalayan Extension Company Ltd., were purchased by the Government on 20th October 1948 in order to convert a part of the system into metre gauge in connection with the direct rail link to Assam over the Indian territory. A portion of this narrow gauge system from Kishanganj to Matigara was converted into metre gauge on a new alignment, along with the extension of the line from Matigara to Siliguri Town to form a direct link of metre gauge system from Kishanganj to Siliguri, and the Narrow Gauge portion from Matigara to Panchanai was dismantled by the Assam Rail Link Project. The portion of the line from Kishanganj to Naksalbari was opened for passenger traffic on 31st July 1948 and the portion from Naksalbari to Siliguri Town on 9th December 1949. The management of the system was taken over by the Assam Railway on 24th December 1949. The Teesta Valley Extension between Siliguri to Giellekhola a distance of 46·81 kilometres of this narrow gauge system was severely damaged and washed away by floods in June 1950 and consequently abandoned.

The Katihar division which was the property of the Bengal Assam Railway before the partition of the country was also transferred to the Assam Railway from the Oudh Tirhut Railway on 26th December 1949.

The broad gauge portion from a point between Chilhati (in Pakistan) and Haldibari to Siliguri Town the property of the Bengal Assam Railway, which for purposes of management had been handed over to the East Bengal Railway (Pakistan) immediately after the partition, (as this portion had no direct link with any Indian Government State Railways), was taken over by the Assam Railway on 20th January 1950 and its conversion into metre gauge was started by the Assam Rail Link Project immediately after the taking over charge from the East Bengal Railway (Pakistan) authorities.

As a result of the merger of the Cooch Behar State with West Bengal, the Cooch Behar State Railway came to vest in the Government of India the functional successors to the States in the Federal field on 1st January 1950. It was made part of the Assam Railway.

The detailed history together with the progress of opening and statistics of working of the constituent units of the Northeast Frontier Railway, upto the time each unit retained its separate entity is given in Chapter V of the Supplement to the History of Indian Railways.

Lines comprised in the System—The Northeast Frontier Railway is made of—

		Open Line Kilometre
(*i*) Northeast Frontier Railway—broad gauge—1·676 metres (comprising Haldibari-Indo/Pak border, Old Malda-Khejuriaghat, Kumedpur- Mukuria-Barsoi and Katihar-Singhabad)		177·99
(*ii*) Northeast Frontier Railway—metre gauge—1·000 metre (comprising Ex-Assam Railway including Assam Rail Link, Rangapara North-North Lakhimpur and Brahmaputra Bridge Project)	Commercial	2,468·56
	Strategic	172·86
	Total .	2,641·42
(*iii*) Northeast Frontier Railway—Darjeeling-Himalayan Section—narrow gauge—0·610 metre		83·64
(*iv*) Chaparmukh—Silghat Railway—metre gauge—1·000 metre (Company's Railway but worked by Northeast Frontier Railway)		81·77
(*v*) Katakhal—Lalabazar Railway—metre gauge—1·000 metre (Company's Railway but worked by Northeast Frontier Railway)		37·80
	Total .	3,022·62

Lines under construction—

	Kilometres
(1) Kalkalighat—Dharmanagar, Rangapara North-North Lakhimpur—Murkong Selek (metre gauge—1·000 metre) . .	31·86
(2) North Lakhimpur—Murkong Selek protion (metre gauge—1·000 metre)	160·90
(3) Broad gauge (1·676 metres) link from near siliguri to Jogighopa in Assam	268·78
Total .	461·54

Running powers—

Home line over other lines (metre gauge—1·000 metre)—

	Kilometres
Pakistan Eastern Railway—(Pakistan)—	
(*a*) Burimari (Pak)—Changrabandha (India)	2·41
(*b*) Lalmanirhat (Pak)—Gitaldaha (India)	12·87
(*c*) Biral (Pak)—Radhikapur (India)	8·45
Other lines over home line (broad gauge—1·676 metres)—	
(*a*) Haldibari (India)—Chilhati (Pak)—metre gauge	3·37
(*b*) Karimganj (India)—Latu (Pak)	12·87

(i) NORTH EAST FRONTIER RAILWAY (BROAD GAUGE—1·676 METRES)

PROGRESS IN OPENING

Sections of Railway (1)	Date of opening (2)	Kilometres (3)	Total (4)	Grand total (5)	Remarks (6)
Northeast Frontier Railway portion— *Pandu Region—* (Old Eastern Bengal Railway Section, Parbatipur to Siliguri)					
*From Haldibari to the Indo-Pak border .	30-9-1926	3·46	3·46		*62·17 kilometres of the broad gauge line from Siliguri towards Calcutta remained in India without direct link with the rest of the country, i.e., Siliguri to Haldibari last station inside India. 58·71 kilometres of the broad gauge line from Siliguri to Haldibari was converted to metre gauge on 26-1-1950 and the remainder, 3·46 kilometres was left as broad gauge section.
Old Malda—Khejuriaghat Jn. . . .	10-4-1961	37·26	37·26		
**Kumedpur Jn.—Mukuria Jn. Mukuria Jn—Barsoi Jn.	12-10-1961 10-10-1961	22·63 4·50	27·13		**Originally constructed as a metre gauge (1·000 metre) line and opened to traffic on 14-12 1959 and subsequently converted to broad gauge (1·676 metres) and opened to traffic on 12-10-1961 as shown in column 2.
†Katihar Jn. —Singhabad . . .	11-10-1961	110·14	110·14		
Total .			177·99	177·99	†The line, measuring 116·15 kilometres, was originally constru ted in metre gauge (1·000 metre) and opened to traffic on 1-1-1909. Out of these 116·15 kilometres, 110·14 kilometres have been converted into broad gauge (1·676 metres) and opened to traffic on 11·10·1961 as shown in Column 2.

NORTHEAST FRONTIER RAILWAY SYSTEM—contd.

Statistics of Working

As the Northeast Frontier Railway was formed on 15-1-1958 by the bifurcation of the North Eastern Railway the statistics for the period from April 1952 to 31st March 1958 will be found in tables A and B relating to the North Eastern Railway at page 96 of the History. Similarly as the constituent units now forming the Northeast Frontier Railway were bought under the North Eastern Railway in April 1952 statistics for the period prior to April 1952 will be found separately in different tables relating to each one of them in the Supplement to the Histoty of Ind an Ra lways.

Table A.—Northeast Frontier R ilway Proper (all Gauges Combined, Excluding Worked Lines)

Year	Route kilometres open at the end of the year	Total capital outlay including suspense, to end of each year i.e., outlay on (*i*) lines open & (*ii*) lines partly or wholley under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in Column (3)	Payment on a/c of rebate to branch lines	Payment to General Revenues	‡Gain or loss to the State pertaining to each year	Earnings per route kilometre per week	Proportion of expenses to earnings
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Kilometres	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	
1958-59 . .	2,669·97	61,89,02,630	12,38,70,742	—4,35,80,000	—6·98	..	2,42,59,173	—6,78,39,173	892	135·18
1959-60 . .	2,694·96	67,72,99,290	13,04,27,337	—4,88,21,605	—7·15	7,872	2,52,86,674	—7,41,16,151	931	137·43
1960-61 . .	2,694·96	82,09,02,056	13,27,91,931	—5,56,34,670	—6·73	..	2,60,85,842	—8,17,20,512	948	141·89
1961-62 . .	2,754·53	99,39,94,960	15,32,44,874	—5,94,58,888	—5·95	11,517	3,24,30,476*	—9,19,00,881	1,070	138·80
1962-63 . .	2,900·08	1,12,15,93,285	19,17,88,680	—4,47,94,260	—3·97	8,264	3,70,23,608*	—8,18,26,132	1,272	123·36
1963-64 . .										
Commercial .	2,730·19	1,07,42,28,512	23,65,72,422	—1,83,24,831	—1·70	7,849	3,24,10,212*	—5,07,42,892	1,666	107·75
Strategic .	172·86	28,79,73,000	10,42,000	—71,07,000	—2·47	..	37,672†	—71,44,672	116	781·72

*The figures of payment to General Revenues represent the amount of dividend only upto 1960-61. From 1961-62 to 1963-64 these figures are inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 40,76,558, Rs. 47,30,170 and Rs. 50,11,132 for the years 1961-62, 1962-63 and 1963-64 respectively.

†This figure represents only payment to the General Revenues in lieu of the tax on passenger fares and not the dividend as the capital-at-charge of the strategic lines is exempt from the payment of dividend.

‡The figures of 'gain or loss' do not include the receipts from subsidised companies—Government share of surplus profits, railway miscellaneous receipts, miscellaneous railway expenditure, expenditure on subsidised Railways and expenditure relating to Open Line Works.

Table B—Northeast Frontier Railway Broad guage—(1·676 metres)

Year	Route kilometres open at the end of the year	Total capital outlay including suspense, to end of each year, i.e. outlay on (*i*) lines open & (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in colum (3)	Pay ment on a/c of rebate to branch lines	Payment to General Revenues	Gain or loss to the State pertaining to each year	Earnings per route kilometre per week	Proportion of expenses to earnings
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Kilometres	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	
1958-59 . .	3·46	..	..	..	..	..	..	..	..	..
1959-60 . .	3·46	3,15,92,308	..	..	..	..	..	..	..	..
1960-61 . .	3·46	13,13,28,244	..	..	..	..	..	..	..	..
1961-62 . .	177·99	13,30,79,945	7,88,695	—29,17,464	2·18	..	*	*	85	469·91
1962-63 . .	177·99	15,22,71,266	25,96,070	—29,24,812	—1·92	..	*	*	280	212·66
1963-64 . .	177·99	27,78,98,344	49,23,705	—39,00,967	—1·40	..	*	*	529	179·23

*Figures of payment to General Revenues and gain or loss are not worked out separately and the combined figures have been shown against the entire system in Table A.

NORTHEAST FRONTIER RAILWAY SYSTEM—contd.

(i) NORTHEAST FRONTIER RAILWAY (METRE GAUGE—1·000 METRE)

PROGRESS IN OPENING

Sections of Railway	Date of opening	Kilometre	Total	Grand Total	Remarks
1	2	3	4	5	6
Northeast Frontier Railway (1·000 metre gauge)					
Manihari to Katihar Jn.—					
Junction with the Ex. O.T. Rly. at Katihar (Old B. & N. W. Rly.)	8-3-1901	0·93			
Manihari to Katihar Jn.	1-4-1887	24·04			
Manihari to Maniharghat	..	12·16			
At Maniharghat due to shifting of ghat . .	31-3-1964	2·96			
Katihar to Barsoi	1-7-1889	39·03			
Barsoi to Kishanganj	15-12-1892	55·88	135 00		
Indo-Pak border (kilometre 259·18) to Gitaldaha	2-1-1902	2·51			
Barsoi reversal between Barsoi and Sudhani (constructed in 1951-2). 0·27 Kms. since dismantled	..	..			
Gitaldaha to Bamanhat/Border . . .	23-9-1902	18·13	20·64		
Indo-Pak border to Golakganj (5·88 kms.). Dismantled on 11-1-63	23-19-1902	..			
Golakganj to Kokrajhar	1-2-1906	57·01			
Kokrajhar to Sorbhog	1-3-1909	63·78			
Sorbhog to Changsari on Sorbhag Amingaon Section	1-4-1909	104·77			*0 83 kilometre is not included in route kilometres due to diversion of main along the Saria ghat bridge on 16-1-1963.
*Shifting of Amingaon station building 0·83 kms. from down facing point during 1951-2 . .	..	..			
Changsari to meeting point (at 4·17 kms. from C.L. of Sariaghat bridge) of the Sariaghat bridge alignment with the old Pandu-Gauhati alignment, near Jalukbari station	16-1-1963	15·17	240·73		
Jainti Branch Dominion Section†—					†This line was originally on the narrow gauge (0·762 metre) but was converted to, and opened on the metre gauge (1·000 metre) upto Rajabhatkhawa from 30th April 1910 upto Jainti from 1st May 1910.
South bank of Kaljani river to Alipur Duar .	18-1-1900	1·03			
Alipur Duar to Rajabhatkhawa . .	5-4-1900	16·78			
Rajabhatkhawa to Jainti . . .	1-2-1901	15·13	32·94		
Dhubri Branch—					
Golakganj to Dhubri	23-9-1902	19·16	19·16		
Tangla Extension—					
Rangiya to Tangla	1-3-1912	39 05	39·05		
Tangla Belsiri Rangapara Rly.—					
Tangla to Majbat	1-12-1932	43·89			
Majbat to Rangapara North	7-2-1933	40 32	84·21		‡This line was originally on the narrow gauge (0 762 metre) but was converted to metre gauge (1·000 metre) upto Rangapara North on 30th April 1953. Originally the Tezpore Ghat to Bindukuri, a length of 13·04 kilometres was opened on 9-8-1894 and Bindukuri to Balipara (19 31 kilometres) on 1-9-1895.
Tezpore-Balipara Branch‡—					
Rangapara North to Tezpore	30-4-1953	26 41	26 41		
Barsoi-Radhikapur Branch—					
Barsoi to Raiganj	1-7-1889	21·21			
Kumedpur to Barsoi§	14-12-1959	..			§This section was converted from metre gauge (1·000 metre) to broad gauge (1·676 metres) on 12-10-1961.
Raniganj to Indo-Pak Border at 423·70 kilometre (Calcutta kilometrage *via* Parbatipur in Pakistan) between Radhikapur and Biral.	15-2-1888	33·05	54·26		
Carried over .				652 40	

NORTHEAST FRONTIER RAILWAY SYSTEM—contd.

(i) NORTHEAST ERONTIER RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway	Date of opening	Kilometres	Total	Grand total	Remarks
1	2	3	4	5	6
Brought forward	..			652·40	
Branches and Extensions on the main line—					
Kosi Branch—					
Katihar to Kasba	1-4-1887	35·15			
Kasba to Forbesganj	1-7-1889	59·43			
Forbesganj to Jogbani	15-2-1909	13·05			
			107·63		
Godavari Extension—					
Katihar Jn. to Indo-Pak Border (beyond Singhabad)*	1-1-1909	..			*This section, measuring 116·15 kilometres, was converted from metre gauge (1·000 metre) to broad gauge (1·676 metres) on 11-10-1961.
			..		
Siliguri Jn. Haldibari Branch† —					†This portion was broad gauge line of the old Bengal-Assam Rly. After the partition of the country the management of this portion was given to E.B. Rly. (Pakistan) as this portion had no direct link with any of Indian State Railways. After linking Assam with the rest of India by rail road through Indian territory this portion was taken over by the Assam Rly. on 20th January 1950 and was converted to metre gauge. After conversion to metre gauge this length was opened to passenger traffic on the dates shown in col. 2.
Siliguri Jn. to Jalpaiguri	23-1-1950	61·61			
Jalpaiguri to Haldibari	26-1-1950				
			61·61		
Branches on the Jointi Branch—					
Dalsingpara Branch—					
Rajabhatkhawa Jn. to Kalchini	1-4-1912	11·81			
Kalchini to Hasimara	1-4-1913	12·32			
Hasimara to Dalsingpara 5·67 Kms. (Abandoned) when Assam Rail Link was constructed.	5-1-1914	..			
			24·13		
B.D. Section—Main line—					
East Bank on the Teesta (Barnes Ghat) to Domohani (Abandoned in 1931).	15-1-1893	..			
Domohani to Dam Din	15-1-1893	42·61			
Kilometre 106·21 to Domohani‡	15-1-1893	4·02			‡Together with kilometre 106·21 to kilometre 107·01 southern extension comprised the Chord Line.
			46·63		
Branch line—					
Lataguri Jn. to Ramshai	11-6-1893	8·56			
Domohani to Barnes Ghat (Abandoned in 1955-56).	1-6-1933	..			
			8·56		
Eastern Extension—					
Mal Jn. to Chalsa Jn.	1-5-1901	8·94			
Mal reversal constructed in 1952-3 (1·92 Kms.) since dismantled.		..			
Chalsa Jn. to Chengmari	1-1-1903	22·69			
Chengmari to Dalgaon	23-3-1903	24·99			
Dalgaon to Madarihat	14-6-1903	14·74			
Chalsa Jn. to Metelli	10-6-1918	8·42			
			79·78		
Carried over				980·74	

NORTHEAST FRONTIER RAILWAY SYSTEM—contd.

(i) NORTHEAST FRONTIER RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward				980·74	
Southern Extension—					
Barnes Jn. to kilometre 98·94 (Abandoned in 1931)	20-4-1900	..			
Kilometre 106·21 to kilometre 98·94*	30-7-1931	7·27			* Together with kilometre 98·97 to Domohani comprises the chord line.
Kilometre 98·94 Changra bandha	20-4-1900	14·45	21·72		
Western Extension—					
Dam Dim to Oodlabari	1-5-1901	4·81			
Oodlabari to Bagrakote	1-1-1902	3·66	8·47		
Old Assam Bengal Railway Section— Main line— (From Dominion boundary)					
Maishashan to Karimganj	4-12-1896	12·87			† Of this, 4·83 kilometres between Katlichara and Damcherra were reconstructed in 1915.
Karimganj to Badarpur	2-12-1896	20·45			
Badarpur to Damcherra	23-4-1899	29·72†			
Damcherra to Lumding	1-12-1903	155·24‡			‡Of this 12·08 kilometres between Damcherra and Lumding were reconstructed in 1915-6 and 1916-7.
Lumding to Nazira	1-1-1901	227·46			
Nazira to Lakwa	15-11-1901	17·33			
Lakwa to Bhojo	1-2-1903	20·37			
Bhojo to Tinsukia	1-3-1903	67·07	550·51		
Branches— Silchar Branch—					
Badarpur to Katakhal	13-6-1898	10·43			
Katakhal to Silchar	8-11-1898	19·41	29·84		
Gauhati Branch—					
Pandu to Gauhati	1-1-1910	6·37§			§ Transferred from the Eastern Bengal Rly. metre gauge (1·000 metre) for working as an integral part of the Assam Bengal Rly. from 1st April 1922.
Gauhati to Jamunamukh	1-1-1897	119·23			
Jamunamukh to Lanka	2-1-1899	30·80			
Lanka to Lumding (Tempy) Stn.	1-1-1899	25·01			
Lumding (Temporary station) to Lumding‖	20-2-1900	5·54	186·95		‖At present there is no existence of Lumding temporary station.
Dikhow Extension—					
Simaluguri to Bihubar	4-2-1913	10·94			
Naginimora Extension—					
Bihubar to Naginimora	1-9-1917	3·65	14·59		
Khowang Branch—					
Simaluguri to Sepon	1-7-1927	43·05			
Sepon to Moran	10-11-1927	10·56	53·61		
Furkating-Badulipar-Jorhat Branch—					
Furkating to Bhalukmara	1-7-1928	54·41			
Bhalukmara to Jorhat	1-8-1928	14·74	69·15		
Jorhat-Donaigaon Branch—					
Jorhat to Donaigaon	12-9-1942	15·31			
Donaigaon to Neamati	7-11-1943	0·80	16·11		
Jorhat-Mariani Branch—					
Jorhat to Mariani	7-11-1943	16·33	16·33		
Carried over				1,948·02	

NORTHEAST FRONTIER RAILWAY SYSTEM—contd.

(i) NORTHEAST FRONTIER RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

PROGRESS IN OPENING—*concld.*

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward				1,948·02	
Karimganj-Longai Valley Branch—					
Karimganj to Kalkalighat	1-2-1928	34·63			
Baraigram to Dullabcherra	1-1-1929	28·85	63·48		
Senchoa-Mairabari Branch—					
Senchoa to Juriagaon	1-3-1930	25·38			
Juriagaon to Mairabari	20-4-1930	24·01	49·39		
D. S. Zone—Main line—					
Dibrugarh Town to Dinjan Stream	15-8-1882	17·76			
Dinjan Stream to Makum Junction	16-7-1883	37·81			
Makum Jn. to Dehing Bridge	2-5-1884	37·01			
Dehing Bridge to Ledo	17-2-1884	9·10			
Ledo to Lakhapani	3-11-1957	8·99	110·67		
Makum Branch—					
Makum Jn. to Doomdoma	2-5-1884	15·53			
Doomdoma to Talap	6-2-1885	9·60			
Saikhoa Extension—					
Talap to Saikhoa Ghat	1-5-1910	5·63*	30·76		*Passenger and goods traffic have been suspended on the section from Dangari to Saikhoa Ghat (7·24 kilometres) from 1956-57.
Assam Rail Link—					
Main line—					
Kishanganj to Thakurganj	1-7-1948	106·64 (Kishanganj to Siliguri North)			
Thakurganj to Naksalbari	31-7-1948				
Naksalbari to Siliguri North	9-12-1949				
Siliguri North to Gish Bridge (New Bagrakote Station)	26-1-1950	32·82			
Madarihat to Hasimara	25-12-1949	10·38			
Alipur Duar Jn. to Fakiragram	26-1-1950	72·01	221·85		
Branch line—					
Siliguri North to Siliguri Town	9-12-1949	2·4[illegible]	2·43		
Cooch Behar Branch—					
Gitaldaha to kilometre 2·34 from Gitaldaha towards Cooch Behar, abandoned in 1949-50 for elimination of reversal.	15-9-1893	—			
Kilometre 2·34 (from Gitaldaha) to Manshahi river	15-9-1893	27·1[illegible]			
Manshahi River to the town of Cooch Behar	15-12-1898	5·23			
Torsa bridge	16-5-1900	0·17			†At present there is no existence of Alipur Duar Khotla.
Cooch Behar to temporary Alipur Duar (Khotla)†	15-4-1899	17·66			
Temporary Alipur Duar (Khotla) to the South bank of Kaljani river	18-1-1900	0·73			
Kilometre 2·34 (from Gitaldaha on Jainiti Branch) to New Gitaldaha (a new station constructed on Gitaldaha-Amingaon Section).	25-3-1950	2·59	53·39		
Rangapara North to Dhalabil ‡	10-3-1962	25·32			‡This section of 172·86 kms considered as strategic line.
Dhalabil to North Lakhimpur‡	15-1-1963	147·54	172·86		
Total Northeast Frontier Railway (1·000 metre Gauge)				2,652·85@	

@The difference in the route kilometres as appearing in the progress of opening and the statistics of working is due to the total route kilometres constructed *i.e.* including length beyond the centre line of station buildings upto dead end at terminal station. The route kilometres as shown in the statistics of working comprise the total length from centre to centre of station buildings of the Railway.

NORTHEAST FRONTIER RAILWAY SYSTEM—contd.

(i) NORTHEAST FRONTIER RAILWAY (METRE GAUGE—1·000 METRE)—contd.

Details of Construction

Permanent Way—

N.F. Railway.

The main line is laid with 29·76 kilograms/metre (60 lbs/yard) RBS and ASCE flat footed rails on wooden sleeper with the following exceptions:—

(a) 12·16 kilometres of track on the section Manihari to Maniharighat is laid with 24·80 kilograms/metre (50 lbs/yard) N.S. steel Rails.

(b) 0·90 kilometre of track on the section Kishanganj to Siliguri Jn. is laid with 43·16 kilograms/metre (89 lbs/yard) rails.

(c) 2·68 kilometres of track at the north approach of Saraighat bridge on the section Rangiya to Gauhati is laid with 39·68 kilograms/metre (80 lbs/yard) IMR rails.

The branch lines are laid with various section of rails as noted below:

(a) 894·450 kilometres of track of the under noted sections are laid with 29·76 kilograms/metre (60 lbs/yard) rails.

	Kilometres
1. Katihar Jn.Jogbani	50·098
2. Barsoi Jn-Radhikapur	54·266
3. Siliguri Jn-Haldibari	3·210
4. Alipurduar Jn. Bamanhat Border	19·118
5. New Gitaldaha Jn-Gitaldaha Border	4·747
6. Fakiragram Jn-Golakganj	46·991
7. Rangiya Jn-Rangapara North Jn.	123·259
8. Rangapara North Jn.-North Lakhimpur	172·875
9. Senchoa Jn-Mairabari	32·990
10. Furkating Jn-Jorhat	17·493
11. Mariani Jn-Neamati	32·733
12. Simaluguri Jn-Moranhat	32·684
13. Tinsukia Jn-Dangari	3·814
14. Makum Jn-Lekhapani	9·382
15. Lumding Jn-Maishashan	218·307
16. Karimganj Jn-Dullab Cherra	44·047
17. Baraigram Jn-Kalkalighat	12·343
18. Badarpur Jn-Silchar	16·093
	894·450

(b) 395·142 kilometres of track on the undernoted sections are laid with 24·80 kilograms/metre (50 lbs/yard) rails.

1. Katihar Jn-Jogbani	57·534
2. Siliguri Jn-Haldibari	0·804
3. New Mal Jn-Changrabandha	27·792
4. Chalsa Jn-Metalli	8·497
5. Rajabhatkhawa Jn-Jainti	15·127
6. Alipurduar Jn-Bamanhat Border	56·827
7. Rangapara North Jn-Tezpur	26·409
8. Chaparmukh Jn-Silghat	81·078
9. Furkating Jn-Jorhat	51·843
10. Simaluguri Jn-Naginimora	14·596
11. Simaluguri Jn-Moranhat	8·850
12. Tinsukia Jn-Dangari	23·012
13. Makum Jn-Lekhapani	0·531
14. Karimganj Jn-Dullabcherra	7·090
15. Badarpur Jn-Silchar	13·743
16. Katakhal Jn-Lalaghat	1·609
	395·142

(c) 58·334 kilometres of track on the under noted sections are laid with 37·13 kilograms/metre (75 lbs/yard) rails.

1. Tinsukia Jn-Dangari	12·469
2. Mukum-Lakhapani	45·865
	58·334

(d) 19·920 kilometres of track on the under noted sections are laid with 39·68 kilograms/metre (80 lbs/yard) rails.

1. Golakganj-Dhubri	19·116
2. Simaluguri-Moranhat	0·804
Total	19·920

(e) 18·667 kilometres of track on New Mal Jn-Changrabandha section is laid with 43·16 kilograms/metre (87 lbs/yard rails.

(f) 15·770 kilometres of track on the undernoted sections are laid with 32·68 kilograms/metre (66¼ lbs/yard) rails.

1. New Mal Jn-Changrabandha	7·209
2. Lataguri Jn-Ramshai	8·561
Total	15·770

(g) 61·042 kilometres of track on Siliguri Jn-Haldibari border sections are laid with 44·61 kilograms/metre (90 lbs yard) rails.

(h) 73·158 kilometres of track on the under noted sections are laid with 20·46 kilograms/metre (41¼ lbs/yard) rails.

1. New Mal Jn-Changrabandha border	8·996
2. Senchoa Jn-Mairabari	16·398
3. Simaluguri Jn-Moranhat	11·265
4. Katakhal Jn-Lalaghat	36·499
Total	73·158

NORTHEAST FRONTIER RAILWAY SYSTEM—*contd.*

(*i*) NORTHEAST FRONTIER RAILWAY (METRE GAUGE—1·000 METRE)—*concld.*

DETAILS OF CONSTRUCTION—*contd.*

Ballast—The whole line except Chalsa Junction Metelli, Maniharighat—Manihari, Rangapara North—Tezpur, Nowgong—Silghat Town, Simaluguri—Naginimora and Jorhat—Neamati branches is ballasted with broken brick ballast, stone or single ballast.

Fencing—The whole metre gauge is unfenced except between Gitaldaha—Golakganj (excluding Pakistan portion) and some stations of different sections which are unfenced.

Curves—The sharpest curve on the Ex. Assam Railway portion is 117 metres (16°) radius.

GRADIENTS

Section	Ruling gradient in ratio unit
Broad Gauge (1·676 metres)	
Katihar Jn-Singhabad	1 in 300
Kumedpur Jn-Barsoi Jn.	1 in 300
Old Malda Jn-Khejuriaghat	1 in 300
Metre Gauge (1·000 metre)	
Manihari-Katihar Jn.	1 in 400
Katihar Jn-Barsoi Jn.	1 in 200
Barsoi Jn-Kishanganj	1 in 250
Kishanganj-Siliguri Jn.	1 in 150
Siliguri Jn-Alipurduar Jn.	1 in 150
Alipurduar Jn-Fakiragram Jn.	1 in 150
Fakiragram Jn-Changsari	1 in 150
Katihar Jn-Jogbani	1 in 200
Barsoi Jn-Radhikapur	1 in 250
Siliguri Jn-Haldibari	1 in 500
New Mal Jn-Mal	1 in 100
Mal-Changrabandha	1 in 150
Lataguri-Ramshai	1 in 300
Golakganj Jn-Dhubri	1 in 100
Fakiragram Jn-Gitaldaha (Ex. E.B. Rly. Portion)	1 in 200
Rangiya Jn-Rangapara North Jn-	1 in 100
Rangapara North Jn-Tezpur	1 in 125
Rangapara North Jn-North Lakhimpur	1 in 200
Changsari-Gauhati	1 in 100
Gauhati-Lumding Jn.	1 in 135
Lumding Jn-Tinsukia Jn.	1 in 150
Chaparmukh Jn- Silighat town	1 in 100
Senchoa Jn-Mairabari	1 in 150
Furkating Jn-Jorhat Jn.	1 in 150
Mariani Jn-Jorhat Jn.	1 in 176
Jorhat—Neamati	1 in 248
Simaluguri Jn-Moranhat	1 in 150
Simaluguri Jn-Naginimora	1 in 100
Dibrugarh Town-Leedo	1 in 107
Makum Jn-Dangari	1 in 159
Lumding Jn-Jatinga	1 in 60
Jatinga-Harangajao	1 in 37
Harangajao-Badarpur Jn.	1 in 60
Badarpur Jn-Silchar	1 in 200
Katakhal Jn-Lalaghat	1 in 150
Karimganj-Dullabcharra	1 in 200
Baraigram Jn-Kalkalighat	1 in 200
Chalsa Jn-Metelli	1 in 40
Rajabhatkhawa Jn-Jainti	1 in 50
Alipurduar Jn-Gitaldaha	1 in 100
Narrow Gauge (0·610 metre)	
Siliguri Jn-Darjeeling	1 in 22½

Table C—Northeast Frontier Railway Proper (Excluding Worked Lines—(Metre Gauge—1·000 Metre)

STATISTICS OF WORKING

Year	Route kilometre open at the end of each year	Total capital outlay including suspense, to end of each year i.e., outlay on (*i*) lines open & (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Payment on a/c of rebate to branch lines	Payment to General Revenues	Gain or loss to the State pertaining to each year	Earnings per route kilometre per week	Proportion of expenses to earnings
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
	Kilometres	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.		
1958-59	2,582·87	61,03,13,704	12,26,14,078	—4,03,74,846	—6·55	..	*	*	913	132·92
1959-60	2,607·86	63,71,18,056	12,90,94,694	—4,48,52,352	—6·98	7,872	*	*	952	134·74
1960-61	2,607·86	68,09,84,886	13,13,69,312	—5,28,71,073	—7·70	..	*	*	969	140·25
1961-62	2,492·90	85,23,26,089	15,08,23,156	—5,39,74,926	—6·29	11,517	*	*	1,163	135·79
1962-63	2,638·45	96,07,33,093	18,76,06,451	—3,76,02,404	—3·89	8,264	*	*	1,367	120·04
1963-64										
Commercial	2,468·56	78,77,41,242	22,96,93,813	—1,03,46,443	—1·30	7,849	*	*	1,789	104·50
Strategic	172·86	28,79,73,000	10,42,000	—71,07,000	—2·47	..	37,672†	*	116	781·72

* Figures of payment to General Revenue and Gain or Loss are not worked out separately and the combined figures have been shown against the entire system in Table A.

† The figure represents only payment to the General Revenue in lieu of the tax on passenger fares and not the dividend, as the captial-at-charge of the strategic lines is exempt from the payment of dividend.

NORTHEAST FRONTIER RAILWAY SYSTEM—contd.

NORTHEAST FRONTIER RAILWAY (NARROW GAUGE—0·762 METRE)

PROGRESS IN OPENING

Section of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand total 5	Remarks 6
*Tezpore-Balipara Section**					
Rangapara to Balipara . . .	1-9-1895	5·00	5·00	5·00	*The Tezpore-Balipara Railway originally having a length of 32·36[illegible] kilometres was converted to metre gauge from Tezpur to Rangapara North, a distance of 27·358 kilometres and the present kilometrage is the residue of that line.

NORTHEAST FRONTIER RAILWAY (D.H. SECTION) (NARROW GAUGE—0·610 METRE).

The properties owned by the late Darjeeling Himalayan Railway Company, which was registered in 1879, and the late Darjeeling Himalayan Railway Extensions Company Ltd., which was registered on 20 January 1913, were purchased by the Government on 20 October 1948, in order to convert a part of the system into metre gauge in connection with the direct rail link to Assam over the Indian Territory. The management of the system was taken over by the Assam Railway on and from 24 December 1949. The remaining length has been worked as an integral part of the Assam (now North Eastern) Rly. System.

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4
Siliguri to Kurseong	23-8-1880	51·09	
Kurseong to Sonada	1-2-1881	15·29	
Sonada to Ghum	4-4-1881	9·45	
Ghum to Darjeeling	4-7-1881	5·84	
Darjeeling to Darjeeling Bazar	16-6-1885	0·40	
TOTAL .	..		82·07
Regarding line—			
Between Ghum and Darjeeling	10-3-1919	0·11	0·11
Assam Rail Link Project (ARLP) new station Siliguri Junction	..	1·46	1·46
GRAND TOTAL .	..	..	83·64
(1) KISHANGANJ EXTENSION—			
Panchanai to Matigara*	16-3-1914	..	..
Matigara to Naksalbari*	1-2-1915	..	..
Naksalbari to Taiabpur*	1-5-1915	..	..
Taiabpur to Islampur Aluabari*	1-11-1914	..	..
Islampur Aluabari to Kishanganj*	15-6-1914	..	..
(2) TEESTA VALLEY EXTENSION—			
Siliguri to Sevoke†	16-3-1914	..	..
Sevoke to Riyang†	1-5-1915	..	..
Riyang to Giellekhola†	29-9-1915	..	..

*Abandoned and converted to M.G. for direct rail link to Assam. After conversion the M.G. line was at first handed over to O.T. Railway. Afterwards the line was taken over by the ex-Assam Railway.

†Original alignment was abandoned due to the construction of mixed gauge line (MG & NG) from SGUJ to Sevoke by the ARLP. The mixed gauge link was again converted to M. G. due to abandonment of the portion Sevoke to Giellekhola in 1950-1. Thus the whole of the T-V extension was abandoned.

DETAILS OF CONSTRUCTION

Permanent-way—Siliguri-Darjeeling section is laid mainly with 20·46 kilograms/metre (41¼ lbs/yard) flat footed steel rails on wooden sleepers. A length of 16·74 kilometres has been renewed with 24·80 kilograms/metre (50 lbs/yard) steel rails and 10·72 kilometres has been relaid with a special section steel rails 25·04 kilograms/metre (50½ lbs/yard).

At the time of original constructions, the line was laid with 19 kilograms/metre flat footed steel rails on wooden sleepers. Out of 83·636 kilometres, a length of 22·610 kilometres have been relaid with 23 kilograms/metre rails and 10·965 kilometres with special section steel rails 25 kilograms/metre.

These re-railings were carried out prior to 1950. Another stretch of 16·093 kilometres has been re-railed in 1961 with 23 kilograms/metre rails.

Ballast—The whole of the Siliguri-Darjeeling section is stone ballasted.

Fencing—The line is unfenced.

Curve—The sharpest curve has a radius of 15 metres.

Gradient—For the greater part of the line, the ruling gradient is about 1 in 25, from Sukna to Ghum (Summit) and thence to Darjeeling. There is a length of about 1·21 of a kilometres on gradients of 1 in 22½ to 1 in 23, uncompensated, with short lengths of 1 in 20.

Table D—Northeast Frontier Railway (Narrow Gauge—0·610 Metre)

STATISTICS OF WORKING

Year 1	Route Kilometrage open at end of each year 2	Total capital outlay, including suspense, to end of each year *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction 3	Gross earnings 4	Net earnings 5	Percentage of net earnings on total capital outlay given in column (3) 6	Payment on a/c of Rebate to branch lines 7	Payment to General Revenue 8	Gain or loss to the State pertaining to each year 9	Earnings per route kilometre per week 10	Proportion of expense to earnings 11
	Kilometres	Rs.	Rs.	Rs.		Rs.	Rs.		Rs.	
1958-59 . .	83·64	85,88,923	12,56,664	—[illegible]2,05,154	—36·16	Nil	‡	‡	[illegible]88	355·05
1959-60 . .	83·64	85,88,923	13,[illegible]2,64[illegible]	—39,69,253	—46·20	Nil	‡	‡	[illegible]05	397·85
1960-61 . .	83·64	85,88,926	14,[illegible]2,619	—27,63,597	—[illegible]2·18	Nil	‡	‡	3[illegible]6	[illegible]
1961-62 . .	83·64	85,88,926	16,33,0[illegible]2	—25,66,498	—29·88	Nil	‡	‡	374	257·16
1962-63 . .	83·64	85,88,926	15,86,159	—42,67,044	—49·68	Nil	‡	‡	364	369·02
1963-64 . .	83·64	85,88,926	19,54,904	—40,77,421	—47·47	Nil	‡	‡	447	408·57

*Included under 1·000 metre gauge in table A.

‡Separate gaugewise figures not recorded.

NORTHEAST FRONTIER RAILWAY SYSTEM—contd.

(ii) CHAPARMUKH SILGHAT RAILWAY (METRE GAUGE—1·000 METRE)

Secretaries & Treasurers—Messrs Martin Burn Ltd., Calcutta

Date of registration of the Company—1915

Sanction to the construction of this line by the old Assam-Bengal Railway Company, on behalf of the Chaparmukh Silghat Railway Company was conveyed in Railway Board's Notification No. 276, dated 5th October 1915.

PROGRESS IN OPENING

Section of Railway 1	Date of opening 2	kilometre 3	Total 4
Chaparmukh to Silghat	30-3-1920	81·77	81·77

DETAILS OF CONSTRUCTION

Permanent-way—The permanent-way consists of 24·80 kilograms/metre (50 lbs./yards) second-hand rails laid on sal and asna sleepers.

Ballast—The line is ballasted from Chaparmukh to Nowgong only.

Fencing—The line is unfenced.

Curves—The sharpest curve has a radius of 436 metres.

Gradients—The ruling gradient is 1 in 100.

CONTRACTS

Dated 14th November 1918, *between the Secretary of State of undivided India and the Chaparmukh-Silghat Railway Company.*

Dated 7th October 1919, *between the Secretary of State of undivided India and the old Assam Bengal Railway Company.*

} As to the construction, maintenance, management and working of the Chaparmukh-Silghat Railway.

The above contracts continue to be in force.

DEED

Dated 25th September 1942, *between the Governor General in Council and Chaparmukh-Silghat Railway Company Ltd.* as to the assessment of rent payable by the Postal Department of the Government of undivided India for Railway buildings etc. continue to be in force.

MAIN PROVISIONS OF CONTRACTS

(*i*) *Land*—The land in Indian Dominion was provided free of cost and the Company allowed to have possession of the land so provided during the continuance of the contract.

(*ii*) *Government aid*—The Government guaranteed to pay such a sum, out of the revenue of old Assam Bengal Railway, as would, together with the net receipts of this railway, make up an amount equal to interest at the rate of 3·5 per cent per annum on the paid-up share capital of the Company, and such a further sum, for the first 10 years, out of the revenue of the Assam Administration, as would raise that rate of interest to 4·5 per cent on such capital.

The Government also allowed the company the sum of Rs. 6,000 per annum and such other actual expenses towards the office expenses and expenses of management and direction and also all such legal expenses as were incurred by the Company with the approval of Government and debitable to revenue. But when the net receipts of the company in any year exceeded 5 per cent on the paid-up share capital, the excess was to be applied towards the reduction of this allowance.

(*iii*) *Terms of working*—The line was managed, maintained, worked and supplied with rolling-stock by the old Assam Bengal Railway (now the Northeast Frontier Railway) for 50 per cent of its gross earnings.

(*iv*) *Distribution of profit*—When the net receipts of the company exceeded the amount sufficient to pay interest at the rate of 5 per cent per annum and office expenses and expenses of management and direction up to a sum of Rs. 6,000 and other actual expenses and legal expenses as aforesaid, one moiety of such excess belonged to this railway and the other to the old Assam-Bengal Railway (now the Northeast Frontier Railway).

(*v*) *Rates and fares*—The rates and fares for the carriage of goods and coaching traffic was such as might from time to time be sanctioned by the Secretary of State of undivided India and the classification of goods was in conformity with that in force on the old Assam-Bengal Railway.

(*vi*) *Special obligations as to the conveyance of*—

(*a*) Mails, troops, police, high Government officials and Government stores—

(*b*) Government bullion and coin, and the persons in charge thereof—

} All matters and things in connection with the management and maintenance of the railway and the conduct of traffic thereon, including police, telegraphs and telegraphic appliances or telephones was in all respects, as far as practicable, carried on in the same manner and subject to the same regulations and control by the Secretary of State of undivided India as were carried on the old Assam-Bengal Railway.

(*vii*) *Power of the Government to determine contract*—The Government might, by giving 12 months' previous notice, the 'notice of purchase', determine the contract, either on 31st March 1948 or at the end of any subsequent period of 10 years, by giving to the Company a sum equal to 25 times the average yearly net earnings during the last preceding 3 years, provided that such sum did not exceed by more than 20 per cent nor be less than, the total capital expenditure of the Company. The last option which fell due on 31st March, 1958, was not exercised and the next option will fall on 31st March, 1968.

The Government might also, by giving likewise the 'notice of special purchase', determine the contract when it was considered desirable that the gauge of the railway should be altered, or to convert that into a line of through communication or to extend that, and the Company was unable to raise the capital necessary for the construction of the extension. In that case, the Government had undertaken to pay to the Company twenty-five times the average net earnings referred to above or 115 per cent of the total capital expenditure of the Company, whichever might be the greater.

(*viii*) *Power of the Company to surrender contract*—Nil.

(*ix*) *Term of contract* [*if not determined under* (*vii*)]—Not specified. The above provisions continue to be in force.

NORTHEAST FRONTIER RAILWAY SYSTEM—contd.

(*ii*) CHAPARMUKH SILGHAT RAILWAY (METRE GAUGE—1·000 METRE)—*concld.*

STATISTICS OF WORKING

Year	Route kilo-metrage open at end of each year	Total capital outlay, including suspense to end of each year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column 3	Amount of interest recoverable from the Government**	Amount of surplus profits payable to the Government**	Total income (columns 5+7—8)	Percentage of total income on total capital outlay given in column 3	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11	12
	kilometres	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.		Rs.	
1919-20 .	81·77	26,76,939	*Nil*	The line was opened from 30 March 1920 only.							
1920-1 .	81·77	28,94,896	1,31,299	65,649	2·27	43,428	—	1,09,077	3·77	31	50·00
1921-2 .	81·77	30,10,055	1,51,190	75,595	2·51	76,273	..	1,51,878	5·05	35	50·00
1922-3 .	81·77	30,53,641	2,18,709	1,09,354	3·58	41,819	..	1,51,173	4·95	52	50·00
1923-4 .	81·77	30,60,163	2,65,828	1,32,914	4·34	..	..	1,32,914	4·34	63	50·00
1924-5 .	81·77	30,62,372	3,21,369	1,60,684	5·25	..	..	1,60,684	5·25	70	50·00
1925-6 .	81·77	36,68,833	3,51,343	1,75,671	5·72	..	4,030	1,71,641	5·59	83	50·00
1926-7 .	81·77	30,78,914	3,77,401	1,88,700	6·13	..	10,021	1,78,679	5·80	89	50·00
1927-8 .	81·77	31,08,757	4,02,492	2,01,246	6·47	..	18,330	1,82,916	5·88	94	50·00
1928-9 .	81·77	32,51,170	4,11,951	2,05,976	6·34	..	22,064	1,83,912	5·66	97	50·00
1929-30 .	81·77	33,04,897	3,00,292	1,50,146	4·54	..	..	1,50,146	4·54	71	50·00
1930-1 .	81·77	33,83,401	2,51,183	1,25,592	3·71	..	..	1,25,592	3·71	59	50·00
1931-2 .	81·77	34,30,629	1,88,592	94,296	2·75	23,676	..	1,17,972	3·44	44	50·00
1932-3 .	81·77	34,40,006	1,77,693	88,846	2·58	31,110	..	1,19,956	3·49	42	50·00
1933-4 .	81·77	34,41,816	1,67,910	83,955	2·44	35,285	..	1,19,240	3·46	39	50·00
1934-5 .	81·77	35,25,090	1,71,852	85,926	2·44	32,907	..	1,18,833	3·37	40	50·00
1935-6 .	81·77	35,01,810	1,55,094	77,547	2·21	43,655	..	1,21,202	3·46	36	50·00
1936-7 .	81·77	35,01,593	1,64,792	82,396	2·35	38,760	..	1,21,156	3·46	39	50·00
1937-8 .	81·77	35,01,829	1,73,849	86,924	2·48	33,648	..	1,20,572	3·44	41	50·00
1938-9 .	81·77	35,01,829	1,71,689	85,845	2·45	34,589	..	1,20,434	3·44	40	50·00
1939-40 .	81·77	35,10,348	1,80,612	90,306	2·57	29,725	..	1,20,031	3·42	42	50·00
1940-1 .	81·77	35,18,981	1,82,833	91,416	2·60	29,068	..	1,20,484	3·42	43	50·00
1941-2 .	81·77	35,18,981	2,18,797	1,09,399	3·11	*20,731	..	1,30,130	3·70	42	50·00
1942-3 .	81·77	35,18,981	1,86,549	93,275	2·66	†35,774	..	1,29,049	3·69	43	50·00
1943-4 .	81·77	35,18,981	2,20,110	1,10,055	3·13	20,228	..	1,30,283	3·70	52	50·00
1944-5 .	81·77	33,84,400	2,86,877	1,43,438	4·24	9,819	..	1,53,257	4·52	68	50·00
1945-6 .	81·77	35,19,000	2,54,000	1,27,000	3·61	‡	..	‡	‡	‡	50·00
1946-7‡ .	..	..	..	..	..	..	..	..	..	..	..
1-4-47 to 14-8-47‡	..	..	..	..	..	..	..	..	..	..	..
15-8-47 to 31-3-48	81·77	35,37,873	1,69,643	84,821	2·39	6,091	..	90,912	2·57	63	50·00
1948-9 .	81·77	35,89,260	2,91,890	1,45,945	4·07	13,246	..	1,59,191	4·41	68	50·00
1949-50 .	81·77	36,25,657	4,03,935	2,01,968	5·57	..	12,315	1,89,653	5·23	94	50·00
1950-1 .	81·77	36,15,462	3,93,595	1,96,797	5·44	..	9,936	1,86,861	5·17	93	50·00
1951-2 .	81·77	36,15,696	5,18,262	2,59,131	7·16	..	..	2,59,131	7·16	121	50·00
1952-3 .	81·77	36,18,082	3,06,468	1,53,234	4·24	12,045	..	1,65,279	4·56	72	50·00
1953-4 .	81·77	36,37,696	3,75,663	1,87,831	5·16	..	5,030	1,82,801	5·02	88	50·00
1954-5 .	81·77	36,37,696	3,03,386	1,51,693	4·17	..	..	1,51,693	4·17	71	50·00
1955-6 .	81·77	36,37,696	3,31,438	1,65,719	4·56	12,045	..	1,77,764	4·89	78	50·00
1956-7 .	81·77	36,37,696	2,82,481	1,91,240	5·25	12,045	5,922	1,97,363	5·42	89	50·00
1957-8 .	81·77	36,37,696	3,41,126	1,70,563	4·68	..	..	1,70,563	4·68	80	50·00
1958-9 .	81·77	36,37,696	3,78,373	1,89,186	5·20	12,045	4,540	1,96,691	5·41	89	50·00
1959-60 .	81·77	36,37,696	4,03,360	2,01,680	5·54	12,045	..	2,13,725	5·87	94	50·00
1960-1 .	81·77	36,37,696	3,37,538	1,68,769	4·64	12,234	11,292	1,69,711	4·66	79	50·00
1961-2 .	81·77	36,37,696	4,03,187	2,01,594	5·54	13,182	..	2,14,776	5·90	95	50·00
1962-3 .	81·77	36,37,696	3,80,721	1,90,361	5·23	13,182	8,868	1,94,675	5·35	89	50·00
1963-4 .	81·77	36,37,696	3,15,986	1,57,996	4·34	13,182	1,561	1,69,617	4·66	74	50·00

*Out of the total subsidy Rs. 19,654 less adjusted during 1941-2 has been adjusted during 1942-3.

†This excludes Rs. 19,654 less adjusted during 1941-2.

‡Figures are not available.

**The term 'Government', here includes the Government of Assam for the first ten years from 1919-20, the Assam Bengal Railway upto 1940-41, Bengal Assam Railway upto 14-8-1947, Assam Railway from 15-8-1947, the North Eastern Railway from 14-1-1952 and the Northeast Frontier Railway from 15-1-1958.

NORTHEAST FRONTIER RAILWAY SYSTEM—contd.

(iii) KATAKHAL-LALABAZAR RAILWAY (METRE GAUGE—1·000 METRE)

Secretaries & Treasurers—Messrs McLeod and Co. Ltd, Calcutta.

Date of registration of the Company—1915

Sanction to the construction of this line by the old Assam-Bengal Railway Company, on behalf of the Katakhal-Lalabazar Railway company was conveyed in Railway Board's Notification No. 451-P., dated 9 March 1916.

PROGRESS IN OPENING

Section of Railway 1	Date of opening 2	kilometres 3	Total 4
Katakhal to Lalabazar	1-4-1923	37·80	37·80

DETAILS OF CONSTRUCTION

Permanent way—The permanent-way consists of 20·46 kilograms/metre (41½ lbs./yards) second-hand rails laid on the sal sleepers, with a small proportion of pynkado.

Ballast—The line is ballasted with stone.

Fencing—The line is unfenced.

Curves—The sharpest curve has a radius of 291 metres.

Gradients—The ruling gradient is 1 in 150.

CONTRACTS

Dated 19th May 1923, *between the Secretary of State of undivided India and the Katakhal-Lalabazar Railway Co. Ltd.* as to the construction, management and working of the Katakhal-Lalabazar Railway.

Dated 16th October 1923, *between the Secretary of State of undivided India and the old Assam-Bengal Railway Co.* for the working, maintenance and management of the Katakhal-Lalabazar Railway.

The above contracts continue to be in force.

DEED

Dated 22nd September 1942, *between the Governor General in Council and Katakhal-Lalabazar Railway Company, Ltd.* as to the assessment of rent payable by the Postal department of the Government of India for railway buildings, etc. continue to be in force.

MAIN PROVISIONS OF CONTRACTS

(i) *Land*—Provided by Government free of cost to the Company.

(ii) *Government aid*—The Government guaranteed interest at the rate of 3·5 per cent per annum on the paid up share Capital of the Company, and the Assam Government guaranteed for the first ten years an additional one per cent on such Capital. The Government also allowed the Company the sum of Rs. 3,500 per annum and such other actual expenses towards the office expenses and expenditure of management and direction and also all such legal expenses as were incurred by the Company with the approval of Government and debitable to Revenue. But when the net receipts of the Company in any year exceed 5 per cent on the paid-up share Capital the excess was applied towards the reduction of this allowance.

(iii) *Terms of working*—The line was worked and supplied with rolling-stock by the old Assam Bengal Railway (now the Northeast Erontier Railway) for 50 per cent of its gross earnings.

(iv) *Distribution of profits*—When the net receipts of the Company in any year exceeded 5 per cent on the paid-up share Capital and office expenses and expenses of management and direction up to a sum of Rs. 3,500 and other actual expenses and legal expenses one moiety of such excess belonged to this Railway and the other to the old Assam-Bengal Railway (now the Northeast Frontier Railway).

(v) *Rates and Fares*—The rates and fares for the carriage of goods and coaching traffic was such as might from time to time be sanctioned by the Secretary of State of undivided India and the classification of goods was in conformity with that in force on the old Assam-Bengal Railway.

(vi) *Special obligations as to the conveyance of*—
(a) Mails, troops, police, etc.—
(b) Government bullion and coin and the persons in charge thereof— } *Nil*

(vii) *Power of the Government to determine contract*—The Government might by giving to the Company 12 months' previous notice which was called the 'notice of purchase' determine the contract either on 31 March 1954 or on 31 March in the last year of any subsequent period of 10 years by giving to the Company a sum equal to 25 times the average yearly net earnings during the last preceding 3 years provided that such sum did not exceed more than 20 per cent, or was less than, the total Capital expenditure of the Company. The option to purchase the line on 31st March 1964 was not exercised. The next option will fall due on 31 March 1974.

The Government might also by giving likewise the 'notice of special purchase' determine the contract when it was considered desirable that the gauge of the Railway shall be altered or it is desired to convert the Railway into a line of through communication or when it is desirable that the line should be extended, and the Company is unable to raise the Capital necessary for the construction of the extension. In this case the Government shall pay to the Company 25 times the average net earnings referred to above or 115 per cent of the total capital expenditure of the Company, whichever may be greater.

(viii) *Power of the Company to surrender contract*—Nil.

(ix) *Terms of contract [if not determined under (vii) and (viii)]*—Not specified.

The above provisions continue to be in force.

(*iii*) KATAKHAL LALABAZAR RAILWAY (METRE GAUGE—1·000 METRE)—*concld.*

STATISTICS OF WORKING

Year	Route kilometrage open at end of the year	Total capital outlay, including suspense, to end of the year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column 3	Amount of interest recoverable from the Government**	Amount of surplus profits payable to the Government**	Total income (cols. 5+7—8)	Percentage of total income on total capital outlay given in Column (3)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11	12
	kilometres	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.		Rs.	
1923-4	37·80	14,66,953	65,807	32,904	2·24	8,789	..	41,693	2·84	34	50·00
1924-5	37·80	15,99,166	90,968	45,484	2·84	24,705	..	70,189	4·38	46	50·00
1925-6	37·80	16,01,739	99,091	49,546	3·09	20,186	..	69,732	4·35	50	50·00
1926-7	37·80	15,99,900	1,07,541	53,770	3·36	15,583	..	69,353	4·33	55	50·00
1927-8	37·80	16,44,278	1,02,958	51,479	3·13	15,764	..	67,242	4·09	52	50·00
1928-9	37·80	17,03,563	98,957	49,478	2·90	21,285	..	70,763	4·15	50	50·00
1929-30	37·80	17,08,053	86,094	43,047	2·52	30,075	..	73,122	4·28	43	50·00
1930-1	37·80	17,11,866	82,655	41,327	2·41	22,962	..	64,289	3·76	42	50·00
1931-2	37·80	17,11,866	59,488	29,744	1·74	43,350	..	*73,094	4·27	30	50·00
1932-3	37·80	17,11,866	53,023	26,511	1·55	46,536	..	73,047	4·27	27	50·00
1933-4	37·80	17,12,616	51,389	25,695	1·50	42,331	..	68,026	3·97	26	50·00
1934-5	37·80	17,18,066	46,459	23,230	1·35	32,003	..	55,233	3·21	24	50·00
1935-6	37·80	17,19,404	46,208	23,104	1·34	27,423	..	50,527	2·94	24	50·00
1936-7	37·80	17,19,233	42,301	21,151	1·23	42,247	..	63,398	3·69	22	50·00
1937-8	37·80	17,19,147	48,542	24,271	1·41	33,261	..	57,532	3·35	25	50·00
1938-9	37·80	17,19,147	53,764	26,882	1·56	30,112	..	56,994	3·32	28	50·00
1939-40	37·80	17,19,147	53,565	26,782	1·56	29,962	..	56,744	3·30	27	50·00
1940-1	37·80	17,19,176	64,269	32,135	1·87	25,124	..	57,259	3·33	32	50·00
1941-2	37·80	17,24,965	68,564	34,282	1·99	†28,004	..	62,286	3·61	35	50·00
1942-3	37·80	17,24,519	96,321	48,160	2·90	‡15,113	..	63,273	3·63	48	50·00
1943-4	37·80	17,30,010	1,22,193	61,097	3·53	4,818	..	65,915	3·81	62	50·00
1944-5	37·80	15,11,243	1,11,152	55,576	3·67	10,381	..	65,957	4·36	..	50·00
1945-6	37·80	17,31,000	1,16,000	58,000	3·35	§	..	§	§	..	50·00
1946-7§	..	..	..	..	..	..	..	..	..	..	..
1-4-47 to 14-8-47 §	..	..	..	..	..	..	..	..	..	..	..
15-8-47 to 31-3-48	37·80	17,30,815	91,802	45,901	2·65	..	527	45,374	2·62	74	50·00
1948-9	37·80	17,30,815	1,79,774	89,887	5·19	..	8,997	80,890	4·67	91	50·00
1949-50	37·80	17,30,815	1,88,184	94,092	5·44	..	..	94,092	5·44	96	50·00
1950-1	37·80	17,34,286	2,01,707	1,00,854	5·82	..	..	1,00,853	5·82	103	50·00
1951-2	37·80	17,35,731	2,31,260	1,15,630	6·66	..	63,423	52,207	3·00	117	50·00
1952-3	37·80	17,35,747	1,91,397	95,698	5·51	..	12,576	83,122	4·78	97	50·00
1953-4	37·80	17,35,747	1,98,458	99,229	5·71	..	13,497	85,732	4·93	101	50·00
1954-5	37·80	17,35,747	1,89,301	94,651	5·45	..	—16,570	¶1,11,221	6·41	96	50·00
1955-6	37·80	17,35,747	1,84,230	92,115	5·31	22,750	—3,376	1,18,241	6·81	93	50·00
1956-7	37·80	17,35,747	2,35,361	1,17,680	6·74	22,750	10,533	1,29,897	7·48	82	50·00
1957-8	37·80	17,35,747	1,74,588	87,294	5·03	..	..	87,294	5·03	89	50·00
1958-9	37·80	17,35,747	1,81,587	90,794	5·23	..	7,720	83,074	4·78	92	50·00
1959-60	37·80	17,35,747	2,12,508	1,06,254	6·12	..	..	1,06,254	6·12	108	50·00
1960-1	37·80	17,35,747	1,96,799	98,400	5·67	..	26,072	72,328	4·17	100	50·00
1961-2	37·80	17,35,747	1,47,121	73,560	4·24	..	—24,069	97,629	5·62	75	50·00
1962-3	37·80	17,35,747	1,68,176	84,088	4·84	..	..	84,088	4·84	85	50·00
1963-4	37·80	17,35,747	1,60,622	80,311	4·62	..	..	80,311	4·62	81	50·00

*This includes Rs. 3,251 for interest on loan not met by net earnings.

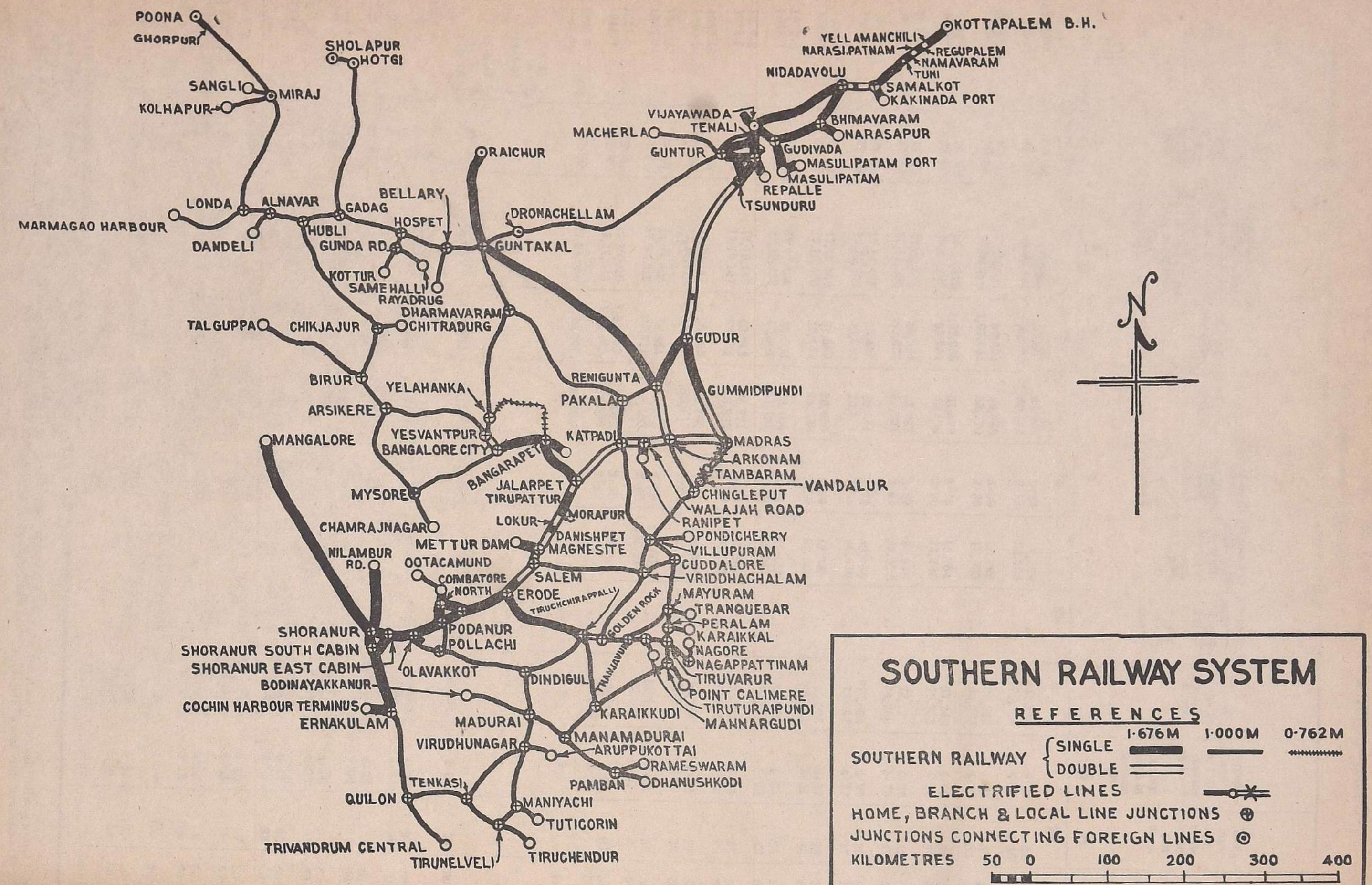
**The term 'Government' here includes the Government of Assam for the first ten years from 1923-24, the Assam Bengal Railway upto 1940-41, the Bengal Assam Railway upto 14-8-1947, the Assam Railway from 15-8-1947, the North Eastern Railway from 14-1-1952 and the Northeast Frontier Railway from 15-1-1958.

†Out of the total subsidy Rs. 129 less adjusted during 1941-2 has been adjusted during 1942-3.

‡This excludes Rs. 129 less adjusted during 1941-2.

§Fignres are not availabe.

¶Includes Rs. (—) 27,699 representing income tax paid on Surplus profit from 1948-9 to 1952-3.



POONA
GHORPURI
SHOLAPUR
HOTGI
SANGLI
MIRAJ
KOLHAPUR
LONDA
ALNAVAR
GADAG
MARMAGAO HARBOUR
DANDELI
HUBLI
GUNDA RD.
BELLARY
HOSPET
RAICHUR
DRONACHELLAM
GUNTAKAL
KOTTUR
SAMEHALLI
RAYADRUG
DHARMAVARAM
TALGUPPA
CHIKJAJUR
CHITRADURG
BIRUR
YELAHANKA
ARSIKERE
RENIGUNTA
PAKALA
MANGALORE
YESVANTPUR
BANGALORE CITY
BANGARAPET
KATPADI
MYSORE
JALARPET
TIRUPATTUR
CHAMRAJNAGAR
LOKUR
MORAPUR
DANISHPET
METTUR DAM
MAGNESITE
NILAMBUR RD.
OOTACAMUND
SALEM
COIMBATORE NORTH
ERODE
TIRUCHCHIRAPPALLI
GOLDEN ROCK
SHORANUR
PODANUR
POLLACHI
SHORANUR SOUTH CABIN
SHORANUR EAST CABIN
OLAVAKKOT
BODINAYAKKANUR
DINDIGUL
THANJAVUR
COCHIN HARBOUR TERMINUS
ERNAKULAM
MADURAI
KARAIKKUDI
MANAMADURAI
VIRUDHUNAGAR
ARUPPUKOTTAI
RAMESWARAM
PAMBAN
DHANUSHKODI
TENKASI
QUILON
MANIYACHI
TUTICORIN
TRIVANDRUM CENTRAL
TIRUNELVELI
TIRUCHENDUR
KOTTAPALEM B.H.
YELLAMANCHILI
NARASIPATNAM
REGUPALEM
NAMAVARAM
TUNI
NIDADAVOLU
SAMALKOT
KAKINADA PORT
VIJAYAWADA
TENALI
BHIMAVARAM
NARASAPUR
MACHERLA
GUNTUR
GUDIVADA
MASULIPATAM PORT
MASULIPATAM
REPALLE
TSUNDURU
GUDUR
GUMMIDIPUNDI
MADRAS
ARKONAM
TAMBARAM
VANDALUR
CHINGLEPUT
WALAJAH ROAD
RANIPET
PONDICHERRY
VILLUPURAM
CUDDALORE
VRIDDHACHALAM
MAYURAM
TRANQUEBAR
PERALAM
KARAIKKAL
NAGORE
NAGAPPATTINAM
TIRUVARUR
POINT CALIMERE
TIRUTURAIPUNDI
MANNARGUDI
N
SOUTHERN RAILWAY SYSTEM
REFERENCES
1·676M 1·000M 0·762M
SOUTHERN RAILWAY
SINGLE
DOUBLE
ELECTRIFIED LINES
HOME, BRANCH & LOCAL LINE JUNCTIONS
JUNCTIONS CONNECTING FOREIGN LINES
KILOMETRES 50 0 100 200 300 400

CHAPTER VII

SOUTHERN RAILWAY SYSTEM

HEAD QUARTERS—Madras.

PRESENT SYSTEM—The Southern Railway was formed on 14th April 1951 by the regrouping of the following Railways into a single unified system—

(a) The Madras and Southern Mahratta Railway system which comprised of:—

(i) The Madras and Southern Mahratta Railway including Kolar Gold-fields Railway (broad gauge—1·676 metres);
(ii) Tenali Repalle Railway (broad gauge—1·676 metres);
(iii) Madras and Southern Mahratta Railway including Kolhapur State and Sangli State Railway (metre gauge—1.000 metre);
(iv) Alnavar Dandeli Railway (metre gauge—1·000 metre);
(v) West of India Portuguese Railway (metre gauge—1·000 metre).

(b) South Indian Railway system which comprised of—

(i) South Indian Railway, including Shoranur-Cochin Branch (broad gauge—1·676 metres);
(ii) Cochin Harbour Branch (broad gauge—1.676 metres);
(iii) South Indian Railway, including Travancore Branch (Tinnevelly-Shencottah—Trivandrum Central Section) (metre gauge—1·000 metre);
(iv) Nilgiri Branch (metre gauge—1·000 metre);
(v) Peralam-Karaikkal Branch (metre gauge—1·000 metre);
(vi) Pondicherry Branch (metre gauge—1·000 metre);
(vii) Tirunelveli-Tiruchendur Branch (metre gauge—1·000 metre);
(viii) Arantangi-Karaikkudi Branch (metre gauge—1·000 metre).

(c) Mysore State Railway system which comprised of—

(i) Mysore State Railway (metre gauge—1·000 metre);
(ii) Nanjangud Chamarajanagar Railway (metre gauge—1·000 metre);
(iii) Bangalore Chik Ballapur Light Railway and Kolar District Railway (narrow gauge—0·762 metre).

Administrative set up—The Southern Railway Administration is headed by the General Manager who is assisted by the Senior Deputy General Manager and other Heads of Departments, viz., Chief Commercial Superintendent, Chief Electrical Engineer, Chief Engineer, Chief Engineer (Construction), Chief Mechanical Engineer, Chief Medical Officer, Chief Operating Superintendent, Chief Personnel Officer, Chief Security Officer, Chief Signalling and Tele-communication Engineer, Controller of Stores and Financial Adviser and Chief Accounts Officer. There are seven Divisions at Guntakal, Hubli, Madras, Madurai, Mysore, Olavakkot and Vijayawada, each functioning under a Divisional Superintendent who is, in effect, the area General Manager.

HISTORY—(a) *The Madras & Southern Mahratta Railway Company* succeeded in 1908 to the earlier Madras Guaranteed Railway Company and the Southern Mahratta Railway Company. The former, working under a first contract dated 22nd December 1852, opened the Rayapuram-Walajah Road (then called Arcot) Section on 1st July 1856.

By 1888 the Madras Railway had gone up to Calicut which remained a terminal at the close of the last century. The Jalarpet-Bangalore cantonment section was opened in 1864 and was extended to Bangalore City only in 1882. By 1862 the Railway extended up to Renigunta and the line was further extended in stages up to Raichur by 1871. From 1st January 1901 the Madras Railway Company took over the East Coast State Railway which had opened the line from Rajahmundry to Waltair and Vijayawada to Kovvur in 1893, and filled up the gaps before the end of the century, except for bridging the Godavari River in 1900 (the Krishna river was bridged in 1893).

The Southern Mahratta Railway Company, working under a first contract dated 1st June 1882, constructed and worked most of the then metre gauge portion of the later Madras & Southern Mahratta Railway and the still later Mysore State Railway, in addition to working for the West of India Portuguese Railway, the section in Goa terminating at Mormugao, opened in 1888. The Headquarters of the Southern Mahratta Railway was at Dharwar, and starting with the opening of Hospet to Bellary and Gadag to Hotgi sections in 1884, and Dharwar to Hospet section in 1885, the Southern Mahratta Railway was, by the end of 1890, extended from Poona to Mysore (*via* Bangalore), and from Vijayawada to Mormugao.

(b) *The South Indian Railway Company* succeeded on 1st July 1874 to the earlier Great Southern of India and Carnatic Railway Companies. The line from Nagappattinam to Erode was commenced in May 1859 by the late Great Southern of India Railway Company and was completed on the broad gauge (1·676 metres). It was later converted to metre gauge in sections between July 1875 and December 1879. The line from Arkonam to Little Conjeeveram was commenced on 11th March 1864, by the Indian Tramway Company under the subsidy system and was completed on the metre gauge. The Indian Tramway Company after having been given a guarantee of 3 per cent per annum on 1 January 1868, went into liquidation in 1870 and became absorbed in a new company called the Carnatic Railway Company. The 3 per cent guarantee accorded on 1st January 1868 was included in the contract entered into by the late Carnatic Railway Company for the extension to Cuddalore. The line was converted to the metre gauge in July 1878. On 1st July 1874, the Carnatic Railway Company was amalgamated with the Great Southern of India Railway Company to form the South Indian Railway Company.

The earlier South Indian Railway Company progressed rapidly, and by 1878 had opened the metre gauge line from Madras to Tuticorin (*via* Thanjavur and Madurai) with a gap due to the Coleroon River near Chidambaram over which a bridge was built in 1879. On 1st January 1891, the South Indian Railway was purchased by the State and handed over together with the Villupuram, Guntakal State Railway to a new Company—The South Indian Railway Company, Ltd.

In 1893, the section from Dharmavaram to Guntakal was handed over to the then Southern Mahratta Railway Company. From 1st January 1908, the Jalarpet-Mangalore section of the former Madras Railway including the Tirupattur Krishnagiri Morapur Dharmapuri and the Nilgiri Railways as also the Shoranur-Cochin Indian States line went over to the South Indian Railway Company. At the same time, the South Indian Railway Company made over to the amalgamated Madras and Southern Mahratta Railway Company the metre gauge lines from Katpadi to Dharamavaram and from Pakala to Gudur, and retained running powers over the broad gauge section from Madras to Bangalore. The Tirupattur-Krishnagiri and Morappur-Hosur Narrow gauge lines were dismantled on 1st August 1941 and 1 November 1941 respectively.

SOUTHERN RAILWAY SYSTEM—contd.

(c) *The Mysore State Railway* came into being much later when the Mysore-Arsikere (metre gauge) section was opened. On 1st October 1919 the Madras & Southern Mahratta Railway Company handed over to the Mysore Durbar the metre gauge sections Bangalore-Mysore-Nanjangud, and Birur-Shimoga (total 226·92 kilometres) belonging to the Durbar. A further handing over by the Madras & Southern Mahratta Railway to the Mysore State Railway was on 1st January 1938, of the metre gauge lines from Bangalore to Harihar and from Yesvantpur to Hindupur.

The contracts with the South Indian Railway Company and the Madras and Southern Mahratta Railway Company were terminated and the lines were brought under State managemant on and from 1st April 1944.

On 1st August 1949, the Kolhapur and Sangli State Railways both of metre gauge, which were being worked by the Madras & Southern Mahratta Railway came to vest in the Government of India as a result of the merger of the States with Bombay Province and thus became an integral part of the Madras & Southern Mahratta Railway. Further, as a result of the Federal Financial Integration with effect from 1st April 1950, the Kolar Gold-fields Railway (broad gauge—1·676 metres) owned by the Mysore Durbar, and worked by the Madras & Southern Mahratta Railway, also came to vest in the Government of India and got merged with the Madras & Southern Mahratta. Similarly the Shoranur-Cochin Railway and Travancore Railway (including Quilon-Trivandrum and Chakai-Thambanur extensions) worked by the South Indian Railway, were merged with the latter on 1st April 1950. The Mysore State Railway also came under direct control of the Government of India on 1st April 1950 as a result of the Federal Financial Integration.

The detailed history along with the progress of opening and the statisties of working of the constituent units of the Southern Railway upto the date each unit retained its separate entity, is given in Chapter VI of the Supplement to the History of Indian Railways.

LINES COMPRISED IN THE SYSTEM—The Southern Railway System is made up of—

	Open line kilometres
Broad Gauge (1·676 metres)	
(*i*) Southern Railway	3,140·53
(*ii*) Tenali Repalle	34·46
(*iii*) Cochin Harbour Branch	6·55
Metre Gauge (1·000 metre)	—
(*iv*) Southern Railway	6,693·83
(*v*) Nanjangud Town—Chamarajanagar	35·87
(*vi*) Cochin Harbour branch	1·79
Narrow Gauge (0·762 metre)	
(*vii*) Southern Railway	154·01
Total	10,067·04

TOTAL ROUTE KILOMETRAGE ELECTRIFIED—36·08 kilometres.

Section Electrified—Madras Beach to Vandalur.

Date of first opening for public service of electrified Section—11th May 1931.

RUNNING POWERS

Home line over other line—Kottapalem to Visakhapatnam, South Eastern Railway 12·49 kilometres.

Other lines over Home line—*Nil*.

(*i*) SOUTHERN RAILWAY (BROAD GAUGE—1·676 METRES)

PROGRESS IN OPENING

Sections of railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
South-West Line —					
Main line—					
Madras Central to Veysarpadi	7-4-1873	3·46			
Veysarpadi to Walajh Road (Arcot)	1-7-1856	101·74			
Walajah Road (Arcot) to Katpadi	7-5-1857	24·08			
Katpadi to Gudiyattam	19-5-1858	24·72			
Gudiyattam to Ambur	16-1-1860	27·38			
Ambur to Vaniyambadi	1-2-1860	16·06			
Vaniyambadi to Jalarpet	23-5-1860	17·32			
Jalarpet Jn. to Bangalore Cantonment	1-8-1864	135·78			
Bangalore Cantonment to Bangalore City	1-7-1882	4·91	355·45		
Bye-pass line near Arkonam to connect South West line and NorthWest line	28-1-1960	2·91	2·91		
West Coast line —					
Jalarpet Mangalore Section—					
West Outer signal at Jalarpet to Tirupattur	23-5-1860	7·48			
Tirupattur to Salem	1-2-1861	112·62			
Salem to Sankaridrug	1-12-1861	38·11			
Sankaridrug to Podanur	12-5-1862	114·65			
Podanur to Pattambi	14-4-1862	104·54			
Pattambi to Kuttipuram	23-9-1861	18·54			
Kuttipuram to Tirur	1-5-1861	15·11			
Tirur to Kadalundi	12-3-1861	26·25			
Kadalundi to Calicut	2-1-1888	14·82			
Calicut to Badagara	1-10-1901	46·59			
Badagara to Tellicherry	1-5-1902	21·73			
Tellicherry to Cannanore	20-5-1903	20·92			
Cannanore to Azhikkal	15-3-1904	6·60			
Azhikkal to Kanhangad	21-8-1906	55·56			
Kanhangad to Kasaragod	1-10-1906	22·88			
Kasaragod to Kumbla	17-11-1906	12·26			
Kumbla to Mangalore	3-7-1907	33·65			
Short link near Shoranur to connect main line with the Shoranur—Cochin railway.	12-11-1942	0·81			
			673·12	1,031·48	
Carried over					

SOUTHERN RAILWAY SYSTEM—contd.

(*i*) SOUTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway	Date of opening	Kilo-metres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward				1,031·48	
Branches—					
Rayapuram branch—					
Veysarpady to Rayapuram	1-7-1856	3·48			
Rayapuram to Beach	22-1-1900	1·66			
Washermenpet to Basinbridge	15-3-1907	1·62			
Korukkupettai to Veysarpady	16-2-1931	1·80			
			8·56		
Ranipet branch—					
Walajah Road (Arcot) to Ranipet	17-4-1899	6·71			
			6·71		
Kolar Gold Field Branch—(b)					
Bangarapet to Marikuppam	1-6-1894	15·90	15·90		(*b*) Taken over by the Government of India with effect from the 1st April 1950 as a result of the Federal Financial Integration.
Mettupalaiyam branch—					
Podanur to Coimbatore Jn. π	1-2-1873	6·08			
Coimbatore Jn. to Mettupalaiyam@	31-8-1873	35·36	41·44		
Salem to Salem Market (Mixed gauge)	..	2·59	2·59		
Irugur-Coimbatore Jn.	1-1-1953	13·92	13·92		
Palghat Olavakkot Section—					
Olavakkot to Palghat‡	2-1-1888	3·86			
			3·86		
Nilambur Branch— (a)					
Shoranur to Angadipuram	16-4-1953	28·28			(*a*) The sections, Shoranur to Angadipuram, Angadipuram to Vaniyambalam and Vaniyambalam to Nilambur Road were originally opened on 3rd February, 3rd August and 26th October, 1927 respectively. But whole of the branch line was dismantled on 20th January 1941 and restored on dates now shown under the column 'Date of opening'.
Angadipuram to Nilambur Road	15-4-1954	38·51			
			66·79		
Salem to Mettur Dam Branch (including the kilomertage of assisted siding from Mecheri Road to Mettur Dam)—	15-4-1929	37·32			
			37·32		
Tiruchchirappalli-Erode Section—					
Tiruchchirappalli Junction to Tiruchchirappali Fort	11-3-1862	4·34			
Tiruchchirappalli Fort to Karur	3-12-1866	71·78			
Karur to Kodumudi	1-7-1867	27·10			
Kodumudi to Erode	1-1-1868	37·69			
			140·91*		
Shoranur-Cochin Branch—					
Shoranur to Ernakulam	16-7-1902	104·64			
Idpalli Ernakulam Extension (from kilometre S. 102·47 to Bridge head at kilometre S. 109·48).	1-7-1940	7·02			
			111·66		
Through Goods line from Commer ford Block Station to Broad Gauge Buffer end in Tiruchchirappalli Goods Station	1-4-1931	1·67			
			1·67†		
Total South West line and West Coast Line and their branches carried over (including Jalarpet—Mangalore)	..	..	..	1,482·81§	
North West Line—					
Main line—					
Arkonam to Nagari	4-3-1861	27·79			
Nagari to Puttur	8-12-1861	15·43			
Puttur to Renigunta	15-9-1862	23·27			
Renigunta to Reddipalle	1-10-1864	61·19			
Reddipalle to Cuddapah	1-9-1865	63·72			
Cuddapah to Muddanuru	1-8-1866	55·22			
Muddanuru to Tadpatri	1-9-1868	51·61			
Tadpatri to Gooty	1-8-1869	47·83			
Gooty to the Tungabhadra river	12-12-1870	121·23			
Tungabhadra to Raichur	15-3-1871	28·84			
Carried over			496·13	1,978·94	

*Originally constructed on the broad gauge (1·676 metres) but was converted to metre gauge, (1·000 metre), Tiruchchirappalli Jn. to Karur on 1st July 1879, and Karur to Erode on 16th December 1879. The whole section was re-converted into broad gauge (1·676 metres) on 26th September 1929.

†For goods traffic only.

‡Converted into mixed gauge from 1st April 1932.

§This excludes 3·17 kilometres of mixed gauge between Salem-Junction and Salem Market which have been included in the M.G. route kilometrage.

πPodanur to Nanjundapuram Block Station 2·74 kilometres converted into mixed gauge from 10th July 1941. A Metre gauge line 3·77 kilometres running parallel to the existing B.G. line from Nanjundapuram to Coimbatore Jn. was opened from 10 February 1941, for goods traffic and from 15th March 1943, for passenger traffic. A portion of mixed gauge length between Podanur and Nanj undapuram of 2·37 kilometres was subsequently bifurcated on 9-4-1958. The length of 2·37 kilometres of metre gauge has been included in the metre gauge route kilometrage.

@Coimbatore Jn. to Coimbatore North originally constructed on the broad gauge (1·676 metres) was converted into mixed gauge in December 1946 and used for metre gauge goods traffic of food grains department.

SOUTHERN RAILWAY SYSTEM—contd.

(i) SOUTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilo-metres 3	Total 4	Grand Total 5	Remarks 6
Brought forward				1,978·94	
North-East line—					
Basin bridge to Korukkupet	15-3-1907	1·71			
Washermenpet to Ennore	22-2-1896	14·11			
Ennore to Gudur	23-2-1899	121·10			*The date of opening of the original metre gauge (1·000 metre). This line was converted to and opened on the broad gauge (1·676 metres) on 1st November 1899.
Gudur to Nellore	1-11-1888*	38·22			
Nellore to Kistna Canal	20-12-1898	249·45			
Kistna Canal to Vijayawada	15-7-1897	5·63			
Mixed gauge near Vijayawada	..	2·14			
Vijayawada to Kovvur	20-2-1893	142·01			
Kovvur to Rajahmundry	6-8-1900	7·55			
Rajahmundry to Kottapalam	15-7-1893*	190·65	772·57		
Tsunduru to Venjandla bye-pass	28-10-1962	11·94	11·94		
Guntur East Cabin to Kistna Canal	20-10-1962	26·46	26·46		
Vijayawada to Secunderabad Section	10-2-1889†	3·48	3·48		†An increase of 0·72 kilometre due to taking over from Central Railway at Vijayawada on 28-10-1960.
Branches—					
Vijayawada to Masulipatam‡	4-2-1908	78·76			‡Vijayawada to Masulipatam Port originally constructed on metre gauge (1·000 metre) was converted to broad gauge (1·676 metres) and opened for traffic on the 27th June 1962.
Masulipatam to Masulipatam Port (Tidal Lock)‡	1-1-1909	4·49	83·25		
Gudivada to Bhimavaram**	17-9-1928	65·56	65·56		**Gudivada-Bhimavaram originally constructed on metre gauge (1·000 metre) was converted to broad gauge (1·676 metres) and opened for traffic on the 8th October 1961.
Samalkot Junction to Kakinada port branch	15-7-1893	15·37	15·37		
Guntur to Tenali	18-3-1916	25·23	25·23		
Nidadavolu-Narasapur	3-2-1929	75·51	75·51		
Gudur—Renigunta	15-9-1887 ††	82·22	82·22		††Date of opening of metre gauge—(1·000 metres). This was converted to broad gauge—(1·676 metres) and opened for traffic on 23-8-1957.
Total open kilometrage	..	..	..	3,140·53	
Double line—					
In and around Madras					
Washermanpet to Basin Bridge	15-3-1907	1·63			
Washermanpet to Vyasarpadi	14-9-1901	2·03	3·66		
South West Line—					
Madras Central to Vyasarpadi	7-4-1873	3·47			
Villivakkam to Avadi	1-5-1877	10·67			
Avadi to Tiruvellore	20-7-1877	20·74			
Tiruvellore to Arkonam	28-8-1877	26·59			
Arkonam to Chitteri	15-8-1958	7·85			
Chitteri to Minnal	4-5-1960	3·86			
Minnal to Mahendravadi	24-8-1960	6·21			
Mahendravadi to Sholinghur	3-11-1960	3·40			
Sholinghur to Thalangai	17-3-1961	4·47			
Thalangai to Walajah Road	30-8-1961	10·53			
Walajah Road to Mukundarayapuram	6-2-1961	7·63			
Mukundarayapuram to Tiruvalam	14-9-1961	5·12			
Tiruvalam to Katpadi	17-3-1959	11·84			
Katpadi to Latteri	13-5-1959	7·90			
Latteri to Vrinchipuram	21-7-1962	5·32			
Vrinchipuram to Gudiyattam	28-2-1963	11·56			
Gudiyattam to Melalathoor	31-8-1963	4·77			
Melalathoor to Valathoor	30-9-1962	5·02			
Valathoor to Mailapatti	30-6-1963	5·99			
Mailapatti to Pachchakuppam	30-9-1963	5·74			
Pachchakuppam to Ambur	31-5-1963	5·91			
Ambur to Vinnamangalam	17-11-1962	7·93			
Vinnamangalam to Vaniyambadi	15-8-1959	8·14			
Vaniyambadi to Jalarpet	17-3-1961	15·45	206·11		
Carried over	..			209·77	

SOUTHERN RAILWAY SYSTEM—contd.

(i) SOUTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—contd.

PROGRESS IN OPENING—concld.

Sections of Railway 1	Date of opening 2	Kilo-metres 3	Total 4	Grand Total 5	Remarks 6
Brought forward	..			209·77	
West Coast Line—					
Jalarpet to Tirupattur	23-1-1959	6·66			
Morappur to Bommidi	28-6-1963	21·72			
Bommidi to Lokur	30-4-1963	10·53			
Danishpet to Tinnappatti	22-1-1962	7·00			
Tinnappatti to Salem	31-7-1962	16·80			
Salem to Mc. Donald's Choultry	28-1-1964	20·69			
Mc. Donald's Choultry to Mavelipalayam	29-4-1963	20·02			
Mavelipalayam to Sankaridrug	31-7-1963	3·66	107·08		
North West Line—					
Arkonam to Hagari (at Arkonam Stn. yard)	15-11-1927	2·19			
Arkonam to Ichchiputtur	28-12-1961	6·53			
Ichchiputtur to Tiruttani	5-3-1962	6·23			
Tiruttani to Ponpadi	30-4-1962	7·28			
Ponpadi to Hagari	25-2-1961	7·64			
Hagari to Vepagunta	31-8-1962	8·56			
Vepagunta to Puttur	17-1-1960	6·94			
Puttur to Taduku	4-11-1961	7·34			
Taduku to Pudi	29-12-1962	6·84			
Pudi to Renigunta	15-7-1962	9·48	69·03		
North East Line—					
Basin Bridge to Korukkupet	1-7-1931	1·71			
Royapuram to Tiruvottiyur	27-1-1930	8·50			
Tiruvottiyur to Ennore	13-10-1961	7·07			
Ennore to Attipattu	31-5-1963	6·00			
Attipattu to Minjur	20-9-1962	3·89			
Minjur to Ponneri	20-3-1963	8·70			
Ponneri to Kavaraipettai	19-8-1963	6·69			
Kavaraipettai to Gummidipundi	20-3-1962	5·92			
Gudur to Manubelu	30-8-1961	9·37			
Manubelu to Venkatachellam	19-10-1963	12·46			
Venkatachellam to Vedayapalam	31-12-1962	9·29			
Vedayapalam to Nellore	28-6-1963	7·24			
Padugupadu to Kodavaluru	28-2-1963	7·37			
Kodavaluru to Talamanchi	2-6-1962	4·66			
Talamanchi to Racherlapadu	3-5-1961	5·13			
Racherlapadu to Alluru Road	11-3-1960	6·41			
Alluru Road to Bitragunta	7-5-1961	6·26			
Bitragunta to Srivenkateswarapalem	31-1-1961	4·33			
Srivenkateswarapalem to Musunur	4-8-1961	5·18			
Musunur to Kavali	16-7-1962	7·03			
Kavali to Chevuru	30-9-1962	8·95			
Chevuru to Tettu	28-2-1962	5·09			
Tettu to Chakicherla	3-2-1961	8·24			
Chakicherla to Ulavapadu	30-3-1960	5·50			
Ulavapadu to Tangatturu	30-6-1961	19·18			
Tangatturu to Surareddipalem	1-5-1961	8·18			
Surareddipalem to Ongole	6-12-1962	10·18			
Ongole to Karavadi	24-3-1963	8·36			
Karavadi to Ammanabrolu	19-6-1963	6·24			
Ammanabrolu to Uppugundur	4-5-1962	7·60			
Uppugundur to Chinnaganjam	9-7-1960	6·42			
Chinnaganjam to Kadavakuduru	20-3-1957	6·26			
Kadavakuduru to Vetapalamu	12-11-1958	8·10			
Vetapalamu to Chirala	4-6-1956	6·47			
Chirala to Stuartpuram	14-9-1956	7·11			
Stuartpuram to Bapatla	14-12-1958	5·96			
Bapatla to Machchavaram	29-10-1959	15·52			
Machchavaram to Hidubrolu	2-9-1959	4·49			
Hidubrolu to Tsunduru	8-4-1959	9·78			
Junction arrangements at Bapatla Hidubrolu and Tsunduru	31-3-1963	2·62			
At Vijayawada (towards C. Rly.)	31-3-1962	1·09			
Hidadavolu to Kovvur	31-7-1963	14·94			
Rajahmundry to Dwarapudi	8-9-1960	19·91			
Dwarapudi to Biccavolu	5-6-1961	13·12			
Biccavolu to Medapadu	30-9-1961	8·22			
Medapadu to Samlakot	20-11-1961	8·96			
Hamsavaram to Tuni	27-12-1960	6·13			
Hamavaram to Gullipadu	8-12-1963	5·70			
Gullipadu to Harasaptnam Road	9-12-1963	11·62			
Regupalam to Yellamanchili	30-3-1964	8·33			
			391·48		
Total double line	..	..		777·36	

SOUTHERN RAILWAY SYSTEM—contd.

(*i*) SOUTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

DETAILS OF CONSTRUCTION

Permanent way—The rails in use on the main and branch lines are—

	Fast line Kilometres	Slow line Kilometres
South West Line (Madras Centre to Bangalore City)—		
44·61 kilograms/metre 'R' flat footed rails laid on wooden, CST/9 and steel trough sleepers	210	144
44·61 kilograms/metre Bull headed rails laid on C. I. and wooden sleepers	147	2
West Cost line (Jalarpet to Mangalore)—		
44·61 kilograms/mertre 'R' flat footed rails laid on wooden, CST/9 and steel trough sleepers	390	100
44·61 kilograms/metre Bull headed rails laid on C. I. pots and wooden sleepers	136	..
37·13 kilograms/metre flat footed rails (B.S.S. and A.S.C.E.) laid on wooden and steel trough sleepers . .	150	..
North West Line (Arkonam to Raichur)—		
44·61 kilograms/metre 'R' flat footed rails laid on wooden, CST/9 and steel trough sleepers	359	58
44·61 kilograms/metre Bull headed rails laid on CI and wooden sleepers	137	7
North East line (Madras to Gopalapatnam Block)—		
51·89 kilomgrams/metre flat footed rails laid on wooden, steel trough and CST/9 sleepers	46	40
44·61 kilograms/metre 'R' flat footed rails laid on wooden steel trough and CST/9 sleepers	722	341

Branch Lines—

The following branch lines are laid with 44·61 kilograms/metre rails laid on wooden, CST/9 steel trough, and C. I. sleepers :

1. Basin Bridge to Washermanpet (double line).
2. Reyapuram to Veysarpadi (double line).
3. Washermanpet to Kerukkupet (double line).
4. Kerukkupet to Veysarpadi (double line).
5. Reyapuram to Madras Beach, excepting about 0·5 kilometre which is laid with 39·68 kilograms/metre bull headed rails on wooden and C. I. sleepers.
6. Veysarpadi to Villivakkam (Up and Down slow lines).
7. Erode to Tiruchchirappalli excepting a length of 5 kilometres which is laid with 39·68 kilograms/metre bull headed rails on C.I. sleepers.
8. Podanur to Mettupalaiyam.
9. Irugur to Coimbatore North Jn.
10. Olavakkot to Palghat excepting a length of one kilometre which is laid with 39·68 kilograms/metre bull headed rails on CI sleepers.
11. Shoranur to Cochin Harbour Terminus including short link at Shoranur.
12. Idapalli to Ernakulam goods.
13. Gudur to Renigunta.
14. Tsunduru to Vejendla Bye pass.
15. Tenali to Guntur.
16. Guntur East Cabin to Kistna Canal.
17. Vijayawada to Masulipatam Port.
18. Gudivada to Bhimavaram.

SOUTHERN RAILWAY SYSTEM—contd.

(*i*) SOUTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

DETAILS OF CONSTRUCTION—*concld.*

The following sections are laid with 39·68 kilograms/metre bull headed and 37·13 kilograms/metre rails on C. I. wooden sleepers:

1. Walajah Road to Ranipet.
2. Bangarapet to Marikuppam.
3. Salem Magnesite Jn. to Metur Dam.
4. Salem to Salem Market.
5. Shoranur to Nilambur Road.
6. Nidadavolu to Narasapur excepting a length of 21 kilometres which is laid with 44·61 kilograms/metre 'R' flat footed rails on wooden sleepers.
7. Samalkot to Kakinada Port.

Ballast—The line is ballasted with stone, granite, quartz, sand moorum and gravel.

Fencing—The Line is fenced in the vicinity of towns, stations and level crossings, and other places where essential.

Curves—The sharpest curve is of 222 metre radius.

Gradients—The Ruling gradient between Madras and Arkonam is 1 in 200 and Arkonam to Jalarpet 1 in 177; between Jalarpet and Bangalore Cantonment 1 in 80 (except at Kuppam Ghat, where it is 1 in 68 and between Bangalore Cantonment and Bangalore City where it is 1 in 78); between Walajah Road and Ranipet 1 in 150, between Bangarapet and Marikuppam 1 in 66·66 between Arkonam and Renigunta 1 in 80; between Renigunta and Nandalur 1 in 100 (except at Ballapalli Ghat where it is 1 in 60); between Nandalur to Vontimitta 1 in 100 and Vontimitta to Cudapah 1 in 90, Cudapah and Gooty 1 in 129 Gooty and Raichur 1 in 104; between Gudur and Renigunta 1 in 200 between Madras and Rajahmundry 1 in 200 except between Basin Bridge and Kurukkupettai where it is 1 in 120 and between Kovvur and Godavari where it is 1 in 150 between Rajahmundry and Kottapalem 1 in 150, between Guntur and Tenali 1 in 150, between Guntur and Kistna canal 1 in 250, between Vijayawada and Masulipatam Port 1 in 175, between Naidadvolu and Narasapur 1 in 200 and between Samalkot and Kakinada Port 1 in 270.

As regards the Jalarpet Mangalore main line and branches (i.e., Ex. S.I. Railway portion) ruling gradient of the greater part of the line is 1 in 100 excepting the following—

1 in 70 between Lokur and Danishpet.
1 in 95 between Kalipatti Road and Sankaridrug.
1 in 75 between Podanur and Madukarai.
1 in 62 on the Walayar Ghat.
1 in 90 between Trikarpur and Charvathur.
1 in 80 between Kotikulam and Kasaraged.
} On Jalarpat Mangalore Section.

1 in 90 between Karur and Murthipalaiyam on the Tiruchchirappalli Erode Section.
1 in 80 between Podanur and Mettupalaiyam.
1 in 66·66 on the Salem Mettur Dam branch.

CONTRACTS—*Nil.* The line is owned and worked by the Government of India.

RATES AND FARES—As fixed by the Central Government from time to time and subject to such powers as may be delegated to the Railway administration.

STATISTICS OF WORKING

Statistics prior to 1st April 1951 will be found separately for the constituent units in different tables relating to each one of them in the Supplement to the History of Indian Railways. Those given below refer to the Southern Railway excepting the worked lines proper i.e., for which separate tables are provided. For purposes of statistics for the year 1951-2, the integration has been assumed to have taken place on 1st April 1951 although the Southern Railway was formed on 14th April 1951.

In comparing the fluctuations in the financial results, the following changes in accounting and financial structure of Railways effective during the two years 1952-3 and 1953-4, should be borne in mind:

(*i*) The earning actually collected by a Zonal Railway either in cash or by book adjustment was taken in the accounts as the earning of that Railway and no apportionment of earnings accruing from the traffic interchanged between the Indian Railways was made.

(*ii*) Inter-Railway adjustments were not made in respect of the expenditure on manufacture, repair and overhaul of rolling-stock at workshops of one Railway on behalf of another (except the independent manufacturing unit like the Chittaranjan Locomotive Works and the Integral Coach Factory).

(*iii*) No inter-Railway adjustment was made in the financial accounts of freight charges for the carriage of Railway stores, fuel, etc. i.e., so far as the financial accounts are concerned these stores were carried free of charge.

SOUTHERN RAILWAY SYSTEM—contd.

(*i*) SOUTHERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

STATISTICS OF WORKING—*concld.*

Table A—Southern Railway proper excluding worked lines—All gauges combined.

Year	Route kilometrage open at the end of each year	Total capital outlay including suspense at the end of each year i.e., outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in Col. 3	Payment to General Revenues	Gain (+) or loss(—) to the state pertaining to each year‖	Earnings per route kilometre per week	Proportion of expenses to earnings	Amount payable to District Boards ‡
1	2	3	4	5	6	7	8	9	10	11
	kilometres	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.		Rs.
1951-2 .	9,393·97	1,15,65,12,849	46,41,73,311	11,97,49,688	10·35	4,57,19,367	7,34,88,155	945	74·20	5,42,166*
1952-3 § .	9,469·33	1,16,30,97,413	43,76,09,858	7,88,83,203	†	4,60,73,191	†	†	†	3,29,362
1953-4 .	9,524·42	1,18,50,46,666	43,53,42,759	5,52,16,753	†	6,66,23,417	†	†	†	6,58,702
1954-5 .	9,614·90	1,24,71,62,659	42,55,80,230	4,31,18,887	3·46	4,83,18,797	—58,70,898	849	89·87	6,70,988
1955-6 .	9,636·86	1,33,01,56,365	47,06,48,000$	4,52,06,000$	3·40	4,99,31,358	—52,06,548	931	90·39	4,81,190
1956-7 .	9,696·78	1,45,14,90,398	49,80,90,000$	5,87,70,000$	4·05	5,03,92,961	78,57,338	988	88·20	5,19,701
1957-8 .	9,792·25	1,60,06,64,900	52,40,23,000$	1,86,11,000$	1·16	5,97,03,512	—4,24,07,260	1,029	96·44	13,14,748
1958-9 .	9,794·58	1,72,60,51,736	54,49,45,980	3,93,84,439	2·28	6,65,31,984	—2,71,47,545	1,070	92·77	..
1959-60 .	9,796·43	1,81,33,89,423	58,37,62,014	6,42,10,318	3·54	7,09,49,096	—67,38,778	1,146	89·00	..
1960-1 .	9,799·41	1,89,43,01,147	62,52,77,616	7,05,87,801	3·73	7,31,52,492	—25,64,691	1,227	88·71	..
1961-2 .	9,870·66	2,11,19,40,717	68,26,48,003	9,93,88,085	4·71	10,40,44,153¶	—46,56,068	1,330	85·44	..
1962-3 .	9,942·74	2,35,57,30,780	73,30,17,537	9,85,08,351	4·18	11,11,93,820¶	—1,26,85,469	1,418	86·56	..
1963-4 .	10,024·24	2,71,25,33,131	81,95,61,011	13,18,55,484	4·87	13,27,55,748¶	—9,00,264	1,572	83·91	..

NOTE—The figures of capital-at-charge are provisional pending closing of the pre-partition accounts and the finalization of the balances of ex-States' railways brought forward on 1st April 1950.

*Represent 4 per cent dividend on capital outlay of Salem and Tanjore District Boards and Rs. 2,12,814 on account of interest on Q. T. & C. T. extensions paid to Travancore Government in 1951-2 in respect of periods prior to integration.

†These results have not been worked out, as the figures of gross earnings and working expenses as booked in individual Railway's accounts during the years 1952-3 and 1953-4 did not represent the true systemwise apportioned and adjusted figures, as stated above.

‡Represent dividends paid to the Thanjavur and Salem District Boards.

§Includes the Tirunelveli-Tirchendur branch purchased by the Government of India on 24th February 1953.

‖The figures of 'gain or loss' do not include the receipts from subsidised companies—Government' share of surplus profits, railway miscellaneous receipts, miscellaneous railway expenditure, expenditure on subsidised Railways and expenditure relating to Open Line Works—Revenue.

¶The figures upto 1960-61 represent only dividend paid to the General Revenues. From 1961-62 to 1963-64 these figures are, however, inclusive of the amount paid to General Revenues in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 2,11,62,040, Rs. 1,98,49,526 and Rs. 1,95,28,371 respectively for the years 1961-62, 1962-63 and 1963-64 respectively.

$Represent the amount actually due to worked lines during 1955-6, 1956-7 and 1957-8 and include adjustments for those years carried out later.

Table B—Southern Railway (Broad Gauge—1·676 Metres)

Year	Route kilometrage open at the end of each year	Total capital outlay including suspense at the end of each year i.e., (*i*) line open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in Col. 3	Payment to General Revenues	Gain (+) or loss(—) to the state pertaining to each year	Earnings per route kilometre per week	Proportion of expenses to earnings	Amount payable to District Boards
1	2	3	4	5	6	7	8	9	10	11
	kilometrage	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.		
1951-2 .	2,782·83	52,28,17,382	24,63,63,472	7,98,52,786	15·27	†	†	1,693	67·51	..
1952-3 .	2,796·75	54,01,81,493	†	†	†	†	†	†	†	..
1953-4 .	2,829·76	54,53,79,359	†	†	†	†	†	†	†	..
1954-5 .	2,867·48	58,12,66,444	21,76,64,943	3,81,04,987	6·56	†	†	1,455	82·49	..
1955-6 .	2,867·48	65,35,69,612	24,65,38,000	4,88,99,000	7·48	†	†	1,653	80·16	..
1956-7 .	2,867·48	74,65,80,295	26,24,20,000	5,03,69,000	6·75	†	†	1,760	80·81	..
1957-8 .	2,949·70	85,26,94,577	28,40,84,000	5,80,23,000	6·80	†	†	2,852	79·58	..
1958-9 .	2,949·69	1,01,03,10,921	29,81,00,924	7,00,62,298	6·93	†	†	1,943	76·50	..
1959-60 .	2,950·30	1,10,47,22,727	32,06,64,114	6,56,22,965	5·94	†	†	2,090	79·53	..
1960-1 .	2,951·01	1,18,83,37,793	34,02,34,730	8,91,97,772	7·51	†	†	2,217	73·78	..
1961-2 .	3,016·57	1,36,03,79,969	37,28,16,765	9,05,53,277	6·66	†	†	2,377	75·71	..
1962-3 .	3,141·13	1,58,22,16,296	40,74,87,783	10,62,35,216	6·71	†	†	2,495	73·93	..
1963-4 .	3,140·53*	1,87,22,08,064	46,86,32,812	12,39,56,525	6·62	†	†	2,870	73·55	..

Note:—The figures of capital-at-charge are provisional pending closing of the prepartition accounts and the finalization of the balances of ex-State's Railways brought forward on 1st April 1950.

*The reduction of 0·60 kilometre in column 2 as compared to the route kilometres open at the end of 1962-63 is due to introduction of orthodox doubling between Gullipadu and Narasapatnam.

† Included in table 'A' above as separate gauge-wise figures were not recorded.

(ii) TENALI REPALLE RAILWAY (BROAD GAUGE—1·676 METRES)

The construction of the line by the ex-Madras and Southern Mahratta Railway Company, at the cost of the District Board of Guntur, was sanctioned in Railway Board's Notification No. 110, dated 9th April 1913.

Progress in Opening

Section of Railway 1	Date of opening 2	Kilometres 3	Total 4
Tenali to Repalle	8-3-1916	34·46	34·46

Details of Construction

Permanent way—The line is laid with 37·13 kilograms/metre (75 lbs./yard) flat-footed British standard steel rails on timber sleepers.

Ballast—The line is ballasted with stone, moorrum and coal ash.

Fencing—Only the station yards are fenced.

Curves—The sharpest curve has a radius of 436 metres.

Gradients—The ruling gradient is 1 in 150.

Agreement and Contract

Agreement dated 14th December 1936 *between the Secretary of State for India in Council and the District Board of Guntur* for working the Tenali-Repalle Branch Railway through the Agency of the Madras and Southern Mahratta Railway Company.

(This agreement shall be deemed to have come into force from the 8th March 1916).

Deed dated 24th March 1937 *between the Secretary of State for India in Council and the Madras and Southern Mahratta Railway Co. Ltd.*, for the continued working of the Company and State lines.

"Agreement dated 8th February 1938 between the Governor-General in-Council and the Madras and Southern Mahratta Railway for working the Tenali Repalle Branch Railway by the Company".

On the termination of the contract between the Secretary of State for India in Council and the Madras and Southern Mahratta Railway Co. Ltd., with effect from 1-4-1944, the line is worked by the Central Government Agency.

"Memorandum of Agreement dated 3rd September, 1946 between the Governor-General in-Council and the District Board, Guntur".

Consequent on the abolition of the District Boards and the constitution of the Zilla Parishads in their places in the Andhra State, the ownership of the branch now vests with the Zilla Parishad, Guntur. Agreement dated the September, 1964 between the President of India and Secretary, Zilla Parishad, Guntur.

Main Provisions of Agreement and Contract

(*i*) *Land*—Provided by the Government free of cost.

The line (which is the property of Zilla Parishad of Guntur) is maintained and worked as an integral part of the Madras and Southern Mahratta Railway which provides the rolling stock and other appliances etc., necessary thereunto.

(*ii*) *Government aid*
(*iii*) *Terms of working*
(*iv*) *Distribution of profits*

For these services the Secretary of State is to receive half-yearly 50 per cent of the gross earnings of the Branch, the balance, after meeting the cost of new minor works and any expenditure incurred on the Branch on account of extraordinary casualty such as bursting of dams, etc., being handed over to the District Board.

By way of rebate the Secretary of State is to pay in respect of and at the end of each financial year such a sum not exceeding in any year the net earnings (exclusive of earning derived from the carriage of revenue stores) from traffic inter-changed between the M. & S.M. Railway and the Branch as shall together with the aforesaid balance of gross earnings of the Branch make up an amount equal to interest at the rate of 3·5 per cent. per annum on the Capital cost of the Branch. This undertaking shall be subject to the proviso that when the aforesaid balance of gross earnings of the Branch without the assistance of a rebate, suffices to pay interest at a rate exceeding 3·5 per cent on the capital cost of the Branch, the surplus shall be divided equally between the Secretary of State and the District Board.

SOUTHERN RAILWAY SYSTEM—contd.

(ii) TENALI REPALLE RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

MAIN PROVISIONS OF AGREEMENT AND CONTRACT—*concld.*

With effect from 1st April 1946, the following revised terms will come into force as agreed upon in Memorandum of agreement, dated 3rd September 1946 between the Governor-General in-Council and the District Board of Guntur.

(i) That the operating ratio of the Madras and Southern Mahratta Railway or of any system of which the Madras and Southern Mahratta Railway may become part in future, shall be adopted to arrive at the proportion of gross earnings of the Branch to be retained by the Governor General for working the Branch.

(ii) That the Governor General shall retain in addition to (i) 5 per cent of gross earnings towards hire of rolling-stock used on the Branch.

(iii) That the Governor General shall also charge a lump sum of Rs. 7,500 (Seven thousand five hundred) per annum for use, for the purpose of the Branch line, of the joint buildings and property belonging to the Governor General at Tenali Junction Station.

(iv) The payment of rebate and division of surplus profits shall continue to be regulated by the existing terms.

Note :—It has been decided to arrive at a figure of operating ratio based on the actual results of working for the past few years and to apply that ratio for the recovery of working expenses of the line for the period of five years with effect from 1-4-1951.

(v) *Rates and fares*— (vi) *Special obligations as to the conveyance of*— (a) Mails, troops, police, high Government officials and Government stores (b) Government bullion and coin	The same as from time to time obtain on the Madras and Southern Mahratta Railway, (now Southern Railway).

(vii) *Power of the Government to determine agreement*—The Secretary of State may give to the District Board notice in writing (which notice is herein referred to as notice of purchase) of his desire to determine the agreement either on 31st March of the tenth year from the date of this agreement i.e., 14th December 1936 or on 31st March in the last year of any subsequent period of ten years, such notice being given not less than 12 months prior to 31st March mentioned therein as the day of determination and pay on such determination as purchase price of money equal to 25 times the average yearly net earnings of three years preceding purchase subject to a a sum maximum price of 120 per cent of the total capital expenditure of the branch on a rupee basis and to a minimum price equal to the capital expenditure.

It has been decided not to determine the agreement on 31-3-1956. Next option will fall due on 31-3-1966.

The Secretary of State may also at any time give to the District Board notice in writing (which notice is herein referred to as notice of special purchase) of his desire to determine the agreement on any date mentioned therein for any one or more of the following reasons—

(a) that the Secretary of State considers it desirable that the gauge of the said Branch should be altered;

(b) that it is desired to convert the branch line into a line of through communication;

(c) that the Secretary of State desires to extend the said Branch and that (if such be the case) the District Board has not within six months from the date of a formal requisition from the Secretary of State requiring it to raise and provide the capital necessary for the construction of the extension raised or provided such additional capital;

and pay in rupee currency on the determination of the agreement, which shall take place at the expiration of twelve months from the date of such notice, as purchase price a sum of money equal to 25 times the average yearly net earnings for the three years preceding purchase or an amount equal to 115 per cent of the total capital expenditure of the Branch, whichever is the greater.

Note—It has been decided, with the concurrence of the District Board, Guntur, that with effect from 1st April, 1956.

(i) the operating ratio of Southern Railway shall be adopted to arrive at the proportion of the gross earnings of the branch to be retained by the Southern Railway for working the branch, and

(ii) the recovery towards joint station expenses at Tenali Junction shall be at Rs. 10,750 (ten thousand seven hundred and fifty) per annum instead of Rs. 7,500 (seven thousand five hundred) referred to in item (iii). A supplemental memorandum of terms is under execution.

(viii) *Power of the Government to determine contract*—As in the case of Madras and Southern Mahratta Railway (Broad Gauge—1·676 metres).

(ix) *Power of the Guntur District Board to determine agreement*
(x) *Power of the Guntur Board to determine contract* } Nil

(xi) *Term of agreement* [*if not determined under* (vii)]—Not specified.

(xii) *Term of contract* [*if not determined under* (viii)]—As noted under Madras and Southern Mahratta Railway (Broad Gauge—1·676 metres).

SOUTHERN RAILWAY SYSTEM—*contd.*

(*ii*) TENALI REPALLE RAILWAY (BROAD GAUGE—1·676 METRES)—*concld.*

Statistics of Working

Year 1	Route kilometrage open at the end of each year 2	Total capital outlay, including suspense, to end of each year, i.e., outlay on (*i*) lines open, and (*ii*) lines partly or wholly under construction 3	Gross earnings 4	Net earnings 5	Percentage of net earnings on total capital outlay given in column 3 6	Earnings per route kilometre per week 7	Proportion of expenses to earnings 8
	kilometre	Rs.	Rs.	Rs.		Rs.	
1915-6	33·94	12,14,651	3,169	1,585	0·13	47	50·00
1916-7	34·60	14,24,906	1,06,811	53,405	3·75	60	50·00
1917-8	34·60	14,85,815	1,09,583	54,792	3·69	61	50·00
1918-9	34·60	14,84,998	1,01,601	50,801	3·42	57	50·00
1919-20	34·60	14,88,245	1,20,781	60,390	4·06	67	50·00
1920-1	34·46	14,86,938	1,40,672	70,336	4·73	78	50·00
1921-2	34·46	14,86,938	1,54,561	77,252	5·20	86	50·00
1922-3	34·46	14,94,195	1,98,124	99,062	6·63	111	50·00
1923-4	34·46	15,12,254	2,09,516	1,04,758	6·93	117	50·00
1924-5	34·46	15,29,222	2,39,416	1,19,708	7·83	133	50·00
1925-6	34·46	15,33,546	2,42,641	—28,345	—1·85	135	111·70
1926-7	34·46	15,46,464	2,67,240	93,737	6·06	149	64·90
1927-8	34·46	15,53,989	2,76,466	95,952	6·17	153	65·29
1928-9	34·46	15,62,878	2,70,870	94,975	6·08	151	64·93
1929-30	34·46	15,76,375	2,77,172	96,738	6·14	154	65·10
1930-1	34·46	15,88,714	2,49,280	89,953	5·66	139	63·91
1931-2	34·46	15,93,421	1,88,212	74,897	4·70	105	60·21
1932-3	34·46	15,96,679	1,96,020	76,919	4·82	109	60·76
1933-4	34·46	15,96,679	1,79,662	72,858	4·57	100	59·45
1934-5	34·46	15,96,679	1,89,127	75,223	4·71	106	60·22
1935-6	34·46	15,97,148	1,98,600	77,597	4·86	111	60·98
1936-7	34·46	15,98,514	2,03,177	78,756	4·93	113	61·24
1937-8	34·46	15,98,918	2,16,152	82,016	5·13	121	62·06
1938-9	34·46	15,98,918	2,30,419	85,586	5·35	129	62·86
1939-40	34·46	15,98,918	2,07,499	79,853	4·99	116	61·52
1940-1	34·46	15,98,918	1,99,689	77,890	4·87	111	60·99
1941-2	34·46	15,98,918	2,08,603	80,009	5·00	116	61·65
1942-3	34·46	15,98,918	2,10,772	80,462	5·03	117	61·82
1943-4	34·46	15,98,918	3,19,195	1,07,780	6·74	178	66·28
1944-5	34·46	15,98,918	3,83,103	1,23,757	7·74	214	67·70
1945-6	34·46	15,82,044	3,96,631	1,26,991	8·03	221	67·98
1946-7	34·46	15,82,190	5,12,648	86,933	5·49	286	83·04
1947-8*	34·46	15,82,566	5,44,274	84,823	5·36	304	84·42
1948-9	34·46	15,83,297	5,94,823	80,752	5·10	332	86·42
1949-50	34·46	15,84,479	7,29,973	49,661	3·13	408	93·20
1950-1	34·46	15,93,058	6,71,408	79,702	5·00	375	88·13
1951-2	34·46	16,02,652	7,17,182	80,271	5·10	398	88·81
1952-3	34·46	16,31,113	7,64,993	78,090	4·79	427	89·79
1953-4	34·46	16,32,661	7,33,882	74,791	4·58	408	89·81
1954-5	34·46	16,40,561	6,32,519	69,167	4·22	352	89·06
1955-6	34·46	16,59,522	6,85,468	72,864	4·39	382	89·37
1956-7	34·46	16,62,550	7,19,997	43,849†	2·64	402	93·91
1957-8	34·46	16,49,131	6,41,535	—29,996†	—1·82	..	104·68
1958-9	34·46	16,49,131	6,62,444	—29,852‡	—1·81	370	104·51
1959-60	34·46	16,49,131	7,02,225	—10,916‡	—0·66	392	101·56
1960-1	34·46	16,50,006	6,96,631	1,511‡	0·09	389	99·78
1961-2	34·46	16,60,633	7,59,907	54,830‡	3·30	424	92·78
1962-3	34·46	16,79,728	8,56,599	34,907‡	2·08	478	95·92
1963-4	34·46	17,60,134	9,47,873	65,080	3·70	529	93·13

* The figures are provisional as the pre-partition accounts have not been closed finally.

† Excludes rebate of Rs. 13,803 for 1956-57 and Rs. 25,831 for 1957-8 due to the Branch.

‡ Excludes rebate of Rs. 55,105 for 1958-59 Rs. 57,720 for 1959-60 and Rs. 56,224 for 1960-61.

(*iii*) COCHIN HARBOUR BRANCH (BROAD GAUGE—1·676 METRES)

The line is within the Reclamation area (Willingdon Island) and was constructed by the Cochin Harbour Authorities with the object of placing the Cochin Port in direct communication with the South Indian Railway System and developing the resources of the country.

Progress in Opening

Section of Railway 1	Date of opening 2	Kilometre 3	Total 4
Bridge Head (at Kilometre S. 109·48 of S. C. Railway) to Cochin Pier	1-7-1940	6·55	6·55

Details of Construction

Permanent Way—The Permanent Way consists of 44·61 kilograms/metre (90 lbs./yard) "R" flat footed rails laid on hardwood sleepers.

Ballast—The line is ballasted with sand blinded over with granite metal.

Fencing—No fencing is provided.

Curves—The sharpest curve is of 218 metre radius.

Gradients—The ruling gradient is 1 in 125.

Agreement

Memorandum of terms dated 19th February, 1940 between the Cochin Harbour Authority and the Ministry of Railways, Government of India.

Main provisions of the Agreement—The line was constructed by the Cochin Port Authorities and is worked by the S. I. Railway now Southern Railway under the terms of an agreement which was under consideration.

Note—The Railway Board have in their Memorandum No. F. 44 (P. R.)/(7) of 23-6-1944 decided that a Memorandum of Term for the working of the Railway will suffice so long as the Cochin Port is and will be administered by the Central Government, the question of formal agreement being considered further if and when a Port Trust is established.

SOUTHERN RAILWAY SYSTEM—contd.

(*iii*) COCHIN HARBOUR BRANCH (BROAD GAUGE—1·676 METRES)

Terms of working
Distribution of profits } The line is worked—

(*a*) for actual cost of maintenance plus a proportionate share of the expenditure of the Undertaking under all other Revenue heads excepting "Superior Supervision",

(*b*) 5 per cent of the gross earnings of the railway or Rs. 1,900 per half-year whichever is greater for "Superior Supervision",

(*c*) 8 per cent of the gross earnings of the Railway or Rs. 3,100 per half-year whichever is greater for hire of "Rolling Stock",

(*d*) all expenditure on account of renewals and replacements.

One-fifth of the gross earnings in excess of the working expenses mentioned in items (*a*) to (*d*) above is to be retained by the South Indian (now Southern) Railway and the balance paid over to the Port Authorities. If, however, the gross earnings are not sufficient to cover the working expenses, the difference is to be made good by the Port Authorities.

NOTE 1—It has been decided to arrive at a share of the system's common expenditure by applying a fixed percentage, based on the results for the past few years, to the actual ascertainable expenditure for the purpose of debiting the line with the working expenses for a period of five years with effect from 1-4-1951.

NOTE 2—In consultation with the Ministry of Transport and Communications it has been decided by the Railway Board, vide their letter No. F(X) 1-58-CNTI/3 dated 19th November 1958, that

(1) the financial results of the line should be worked out on an annual basis instead of half-yearly.

(2) the share of surplus profits to be retained by Southern Railway shall be at 1/6th instead of at 1/5th as at present, vide clause 21(*ii*) of the Memorandum of terms.

(3) a separate Depreciation Reserve Fund shall be created by the Cochin Harbour Authority to cover all expenditure incurred on replacements and renewals on the branch. The contribution to the Fund shall be made by the undertaking at 1/60th of the Capital at charge of the branch at the end of the previous financial year by charging the same to the revenue expenditure of the branch as a distinct item before arriving at the surplus or deficit of the branch. The fund shall be maintained and administered by the Cochin Harbour Authority. All expenditure on account of replacements and renewals incurred on the branch either by the undertaking or by the Cochin Harbour Authority shall be met from this fund. If, in any financial year, the expenditure incurred by the undertaking on account of replacements and renewals is more than the balance in the Depreciation Reserve Fund, the deficiency shall be made good by the Cochin Harbour Authority in the same financial year.

(The above changes take effect from 1st April 1958).

NOTE 3—The share of outlay of the undertaking (i.e., Southern Railway) under such of the Revenue heads of expenditure which are not separately recorded excepting "superior supervision" specified in clause 2 (h)(I) of the memo of terms should, with effect from 1st April, 1956 be calculated as specified in Schedule 'A' of the Memo of terms instead of at the fixed rate of 21 per cent adopted for the five year period from 1st April 1951.

STATISTICS OF WORKING

Year	Route kilometrage open at the end of each year	Total capital outlay including suspense to end of each year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column 3	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8
	kilometre	Rs.	Rs.	Rs.		Rs.	
1940-1	6·55	(*a*) 29,00,000	1,06,853	42,997	1·48	415	59·76
1941-2	6·55	(*a*) 29,00,000	1,10,318	67,179	2·32	560	64·89
1942-3	6·55	(*a*) 30,70,000	5,26,404	2,27,996	7·43	1,541	56·69
1943-4	6·55	(*a*) 34,35,600	6,07,502	2,71,273	7·90	1,774	55·35
1944-5	6·55	(*a*) 34,73,000	7,34,689	1,50,233	4·33	2,151	79·55
1945-6	6·55	37,31,000	8,80,541	4,34,716	11·65	2,578	50·63
1946-7	6·55	37,89,075	8,20,223	1,75,773	4·64	2,402	78·57
1947-8*	6·55	39,16,945	8,12,765	1,50,902	3·85	2,373	81·44
1948-9	6·55	39,40,617	8,12,535	1,51,657	3·85	2,379	81·34
1949-50	6·55	40,90,443	8,89,713	51,412	1·26	2,605	94·22
1950-1	6·55	41,50,584	12,67,674	1,82,947	4·41	3,711	85·57
1951-2	6·55	41,90,728	11,83,807	2,40,029†	5·73	3,475	79·72
1952-3	6·55	41,96,992	8,50,796	67,448†	1·61	2,498	92·07
1953-4	6·55	41,98,089	9,43,411	1,35,407†	3·23	2,770	85·65
1954-5	6·55	42,31,509	9,48,538	1,20,403†	2·85	2,785	87·31
1955-6	6·55	42,82,629	14,80,346	4,51,334	10·53	4,346	69·51
1956-7	6·55	43,46,862	13,37,167	(*b*) 1,76,320	4·06	3,921	81·11
1957-8	6·55	45,12,138	16,85,383	(*b*) 1,96,569	4·36	4,948	84·25
1958-9	6·55	47,33,832	13,19,147	—1,18,050	—2·50	3,873	108·95
1959-60	6·55	48,27,029	10,33,630	—4,58,062	—9·51	3,035	144·40
1960-1	8·34(*c*)	92,98,450	16,68,131	—1,91,335	—2·06	3,624	111·46
1961-2	8·34(*c*)	1,01,11,588	17,24,625	2,16,524	2·14	3,977	97·24
1962-3	8·34(*c*)	1,01,47,406	2,02,29,921	88,056	0·87	4,681	95·66
1963-4	8·34(*c*)	1,01,70,034	12,35,123	3,794	0·04	2,848	99·69

*Figures are yet provisional due to non-closing of Accounts for 1947-8.

† Modified figures showing net earnings actually due. Figures given previously were provisional.

(*a*) Represents the approximate capital outlay as advised by the Cochin Harbour Authorities.

(*b*) Represents net earnings based on revised terms for working.

(*c*) Includes metre gauge track of 1·79 kilometres.

SOUTHERN RAILWAY SYSTEM—contd.

(*iv*) SOUTHERN RAILWAY (METRE GAUGE—1·000 METRE)

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometre 3	Total 4	Grand Total 5	REMARKS 6
(*a*) *Northern Region*					
Main Line—					
Vascodagama to Sonaulim	17-1-1887	68·73			
Sonaulim to Castle Rock	3-2-1888	18·24			
Castle Rock to Deuli	15-6-1887	4·43			
Deuli to Dharwar	24-1-1887	90·12			
Dharwar to Hospet	1-7-1885	162·98			
Hospet to Bellary	24-3-1884	65·20			
Bellary to Guntakal†	16-5-1887	48·44			†This section, which was opened throughout in 1871 as a broad gauge (1·676 metres) branch of the former Madras Railway was made over to the former Southern Mahratta Railway Company on 1st February 1887 and converted to metre gauge (1·000 metre) on 16th May 1887.
Guntakal to Nandyal	11-7-1887	146·11			
Nandyal to Cumbum	15-6-1890	101·68			
Cumbum to Tadepalli	3-10-1889	197·00			
Tadepalli to Vijayawada	..	3·97‡			
			906·90		‡An increase of 1·22 kilometres due to provision of separate metre gauage line between Sitanagaram South Cabin and North Cabin in connection with separation of gauges and an increase of 0·11 kilometre due to metre gauge track left over in Vijayawada yard after the conversion of Vajayawada—Masulipatam Port Section.
Branches—					
Harihar Branch—					
Hubli to Harihar	18-10-1886	130·02			
			130·02		
Bijapur Branch—					
Gadag to Hotgi	1-8-1884	278·54			
Hotgi to Sholapur	15-5-1927	14·89			
			293·43		
Poona Branch—					
Londa to Belgaum	21-3-1887	51·18			
Belgaum to Miraj	22-12-1887	138·21			
Miraj to Koregaon	2-5-1887	122·31			
Koregaon to Ghorpuri	18-11-1886	133·69			
Ghorpuri to Poona	4-10-1890	1·46			
			446·85		
Guntakal-Mysore Frontier Branch—					
Guntakal to Dharmavaram	1-3-1892	101·63			
Dharmavaram to Hindupur	23-4-1893	79·31			
Hindupur to Mysore Frontier	17-7-1893	11·70			
			192·64		
Bellary-Rayadrug Branch—					
Bellary to Rayadrug	1-7-1905	53·67			
			53·67		
Hospet-Kottur Branch—					
Hospet to Kottur	1-4-1905	69·46			
Gunda Road to Nagalapuram	1-12-1906	5·5 §			§The decrease is due to dismantlement between Nagalapuram and Ramanamalai branch on 31-3-1936.
Nagalapuram to Ramgad	24-5-1909	4·57			
Ramgad to Yeshwantnagar	1-10-1910	10·93			
Yeshwantnagar to Samehalli	3-3-1928	18·89			
			109·37		
Carried over				2,132·88	

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SOUTHERN RAILWAY SYSTEM—contd.

(*iv*) SOUTHERN RAILWAY (METRE GAUGE—1·000 METRE)

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	REMARKS 6
Brought forward .				2,132·88	
Alnavar-Dandeli Branch—					
Alnavar to Dandeli*	1-2-1919	30·77	30·77		*Purchased by the Government on 4 February 1938 from the District Board of Kistna.
Guntur-Macherla Branch—					
Guntur to Macherla	15-1-1930	128·47	128·47		
Katpadi-Dharamavaram Branch—					
Katpadi to Pakala	18-3-1891	63·54			
Pakala to Vayalapad	1-1-1892	75·14			
Vayalapad to Dharamavaram	20-3-1892	151·50			
			290·18		
Pakala-Renigunta Branch—					
Pakala to Tirupati West	18-3-1891	40·31			
Tirupati West to Renigunta	§15-9-1887	12·81			§Renigunta to Gudur a length of 82·22 kilometres has been converted into Broad Gauge and opened for traffic on 23-8-1957.
			53·12		
Dronachellam-Kurnool Railway—					
(At Dronachellam)	1-1-1909	0·14	0·14		
Kolhapur State Railway†—					
Kolhapur to Miraj	21-4-1891	47·11	47·11		
Sangli State Railway†—					†Merged with M.& S.M. Railway on 1-8-1949 as a result of the merger of the former Indian States with Provinces.
Miraj Junction to Sangli	1-4-1907	7·89	7·89		
Bangalore Extension—					
Mysore to Mandya	25-2-1882	44·98			
Mandya to Channapatna	20-3-1881	37·52			
Channapatna to Bangalore	1-2-1881	55·92	138·42		
Nanjangud Extension—					
Mysore to Nanjangud	1-12-1891	24·29			
Nanjangud to Nanjangud Town	12-7-1899	1·22	25·51		
Arsikere Extension—					
Mysore to Arsikere	3-1-1918	165·68	165·68		
Birur-Shimoga Section—					
Birur to Shimoga	1-12-1899	60·74	60·74		
Chickjajur-Chitradurg Section—					
Chickjajur to Chitradurg	5-1-1921	33·64	33·64		
Bangalore-Harihar Section‡—					‡These sections were taken over by the Mysore State Rly. from Madras and Southern Mahratta Railway Company from Jan. 1938.
Bangalore-Tumkur	11-8-1884	68·77			
Tumkur-Gubbi	26-12-1884	17·70			
Gubbi-Birur	12-8-1889	123·23			
Birur-Harihar	21-2-1889	129·05	338·75		
Carried over .				3,453·30	

SOUTHERN RAILWAY SYSTEM—contd.

(iv) SOUTHERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

Progress in Opening—*contd.*

Section of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward				3,453·30	
*Hindupur (Yesvantpur-Mysore Frontier) Section**—					*These Sections were taken over by the Mysore State Railway from Madras and Southern Mahratta Railway Company from January 1938.
Yesvantpur-Dodballapur	15-12-1892	32·51			
Dodballapur-Mysore Frontier	17-9-1893	49·87	82·38†		†Of this 11·02 kilometres (between Yesvantpur and Yelahanka) are on a mixed gauge (metre gauge-1·000 metre and narrow gauge-0·762 metre).
Shimoga-Talaguppa extension—					
Shimoga to Shimoga Town	31-1-1929	2·16			
ShimogaTown to Ragihosahalli	12-4-1930	28·36			
Ragihosahalli to Arasalu	25-5-1931	12·33			
Arasalu to Anandapuram	30-4-1934	15·43			
Anandapuram to Sagara	11-3-1938	26·28			
Sagara Tallaguppa	10-11-1940	15·30	99·86		
(*b*) *Southern Region*					
Madras-Dhanushkodi					
Main Lines—					
Madras Beach Junction to Madras Beach	15-1-1900	0·18			
Madras Beach old to Park	1-1-1879	2·91			
Madras Park to Tindivanam	1-9-1876	123·69(*a*)			(*a*) The section between Madras Beach and Egmore, 4·17 kilometres is electrified double line. The section between Madras Egmore and Tambaram, 25·03 kilometres, is triple line of which two lines are electrified, opened on 11th May 1931. The section between Tambaram and Vandalur a length of 6·89 kilometres, is electrified and was opened in the year 1961-62.
Tindivanam to Cuddalore Junction	1-1-1877	82·67			
Cuddalore Junction to Porto Novo	1-7-1877	27·60			
Porto Novo to Chidambaram	1-10-1878	10·83			
Chidambaram to Coleroon	1-7-1879	7·69			
Coleroon to Sirhazhi	1-1-1878	9·75			
Sirhazhi to Mayuram	1-7-1877	19·71			
Mayuram to Thanjavur	15-2-1877	70·42			
Thanjavur to Tiruchchirappalli Junction	11-3-1862	50·69‡			‡Originally constructed on the broad gauge (1·676 metres) but was converted to metre gague (1·000 metre) Tanjavur to Budalore, 17·46 kilometres, on 10th July 1875, and Budalore to Tiruchchirappalli Junction, 32·41 kilometres, on 17th July 1857. The Section between Golden Rock and Tiruchchirappalli Junction is a double line and the length is 3·62 kilometres.
Tiruchchirappalli Junction to Pudukottai	17-4-1929	52·69			
Pudukottai to Manamadurai Jn.	1-7-1930	96·38			
Manamadurai Jn. to Mandapam	1-8-1902	97·19			
Mandapam to Pamban	1-1-1914	5·02			
Pamban to Rameshwaram Road	15-10-1927	10·91			
Rameshwaram Road to Dhanushkodi Jetty	10-12-1908	17·12			
Dhanusushkodi Jetty to Dhanushkodi point	1-12-1914	0·11	685·56		
Branches—					
Arkonam Branch—					
Chingleput to Walajabad	1-8-1880	21·98			
Walajabad to Conjeeveram	1-1-1881	12·78			
Conjeeveram to Arkonam	8-5-1865	28·41§	63·17		§ Originally constructed on broad gauge (1·676 metres) but was converted to metre gauge (1·000 metre) in sections on the 12, 13 and 14th July 1878.
Katpadi Branch—					
Villupuram to Tiruvannamalai	17-11-1890	67·27			
Tiruvannamalai to Pondicherry	18-3-1891	91·94	159·21		
Pondicherry Branch—					
Villupuram to Pondicherry	15-12-1879	39·14**	39·14		**A length of 12 63 kilometres from East bank of Gingee River to Pondicherry, which was under Pondicherry Railway Company has been taken over by the Southern Railway in the year 1962-63.
Peralam-Karaikkal Branch—					
Peralam to Karaikkal	14-3-1898	23·58	23·58		
Carried over				4,606·20	

SOUTHERN RAILWAY SYSTEM—contd.

(iv) SOUTHERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	REMARKS 6
Brought forward .				4,606·20	
Villupuram Tiruchchirappalli Chord—					
Villupuram to Vriddhachalam	1-12-1927	54·06			
Vriddhachalam to Lalgudi	1-2-1929	94·90			
Lalgudi to Bikshandarkoil	10-3-1928	10·64			
Bikshandarkoil to Srirangam	12-12-1927	4·43			
Srirangam to Golden Rock	22-8-1927	9·09	173·12		
Cuddalore Vriddhachalam Section—					
Cuddalore Junction to Vriddhachalam . .	21-6-1928	56·92	56·92		
Salem-Vriddhachalam Section—					
Salem Junction to Salem Market . . .	1-1-1917	0·58‡			‡Originally constructed on the broad gauge (1·676 metres) but was converted into a mixed gauge on 3 February 1931, used for B. G. goods traffic only.
Salem Market to Salem Town	1-1-1917	3·04§			
Salem Town to Chinnasalem	3-2-1931	81·98			
Chinnasalem Junction to Vriddhachalam . .	17-8-1931	51·64	137·24		§Originally constructed on broad gauge (1·676 metres) but was converted into metre gauge (1·000 metre) on 3rd February 1931.
Tranquebar Branch—					
Mayuram to Tranquebar	25-11-1926	28·94	28·94		
Mayuram Karaikkudi Branch—					
Mayuram Junction to Mutupet	2-4-1894	86·28			
Mutupet to Pattukottai	20-10-1902	27·41			
Pattukottai to Arantangi	31-12-1903	45·62			
Arantangi to Karaikkudi	30-3-1952	26·31	185·62		
Mannargudi Branch—					
Nidamangalam to Mannargudi	15-2-1915	13·53	13·53		
Tirutturaipundi-Point Calimere Branch—					
Tirutturaipundi to Agastiyampalli . . .	15-5-1919	36·92			
Agastiyampalli to Point Calimere . . .	20-1-1936	8·67	45·59		§§Originally constructed on the broad gauge (1·676 metres) but was converted to metre gauge (1·000 metre). Thanjavur to Nidamangalam 30·01 kilometres on 3rd July 1875 and Nidamangalam to Tiruvarur 24·30 kilometres on 26th January 1875.
Nagore Branch—					
Thanjavar to Tiruvarur	2-12-1861	54·31§§			
Tiruvarur to Nagappattinam	15-7-1861	23·06¶			¶Originally constructed on the broad gauge (1·676 metres) but was converted to metre gauge (1·000 metre) on 19th June 1875.
Nagappattinam to Nagore	1-12-1899	7·52	84·89		
Through goods line between Tiruchchirappalli Junction and Golden Rock *via* classification Yds.	1-4-1931	2·56	2·56		
Tiruchchirappalli Tuticorin Section—					
Tiruchchirappalli Junction to Madurai . .	1-9-1875	154·48**			**Originally part of main line since shown as branch line. Tiruchchirappalli Manamadurai Jn. Chord is included in main line.
Madurai to Tuticorin	1-1-1876	158·92			
Tuticorin to Foreshore	7-8-1899	0·53	313·93		
Dindigul Coimbatore Section—					
Dindigul to Pollachi	19-11-1928	120·97			
Podanur to Pollachi	15-10-1915	39·40	160·37		
Mettupalaiyam Branch—					
Nanjundapuram Block Station to Coimbatore Jn.	10-7-1941	3·77@	3·77		@Opened for goods traffic on 10-7-1941 and passenger traffic on 15-3-1943.
Podanur to Nanjundapuram	9-4-1958	2·37	2·37*		*Due to bifurcation of mixed gauge line into separate broad gauge and metre gauge line on 9-4-1958.
Carried over .				5,815·05	

SOUTHERN RAILWAY SYSTEM—contd.

(*iv*) SOUTHERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

PROGRESS IN OPENING—*concld.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	REMARKS 6
Brought forward				5,815·05	
Pollachi-Palghat Section—					
Pollachi to Palghat	1-4-1932	54·83			
			54·83		
Madurai-Manamadurai Section—					
Madurai to Manamadurai	1-8-1902	46·67			
			46·67†		† Originally formed part of main line since shown as branch line. Trichy Manamadurai Jn. Chord is included in main line.
Madurai-Bodinayakanur Branch (b)—					(*b*) Madurai-Bodinayakanur Branch a length of 89·48 kilometres was originally opened on 20-11-1928 and dismantled excepting a portion of line from Madurai Junction to Nagomalai quarry from kilometre G. M. 494·87 to kilometre G.M. 502·12/505· 3 which is retained for quarry siding.
Madurai to Usilampatti	10-9-1953	37·27			
Usilampatti-Bodinayakanur	25-7-1954	52·75			
			90·02		
Pamban-Rameswaram Branch—					
Pamban to Rameswaram	1-9-1906	11·33			
			11·33*		* Originally formed part of main line since converted into a branch line.
Virudhunagar-Tenkasi Chord—					
Virudhunagar to Tenkasi	30-6-1927	120·59			
			120·59		
Maniyachi-Shencottah Section—					
Maniyachi to Tirunelvelli	1-1-1876	29·29			
			29·29		
Mettupalaiyam-Ootacamund Section—					
Mettupalaiyam to Coonoor	15-6-1899	27·34			
Coonoor to Fernhill	15-9-1908	17·48			
Fernhill to Ootacamund	15-10-1908	1·79			
Tirunelvelli Tiruchendur Branch—			46 61		
Tirunelvelli-Tiruchendur	24-2-1923	61·44			
			61·44		
Tirunelvelli-Shencottah Section—					
Tirunelvelli to Kallidaikurichi	1-6-1902	30·80			
Kallidaikurichi to Shencottah	1-8-1903	50·50			
			81·30		
Shencottah-Trivandrum Central Section—					
Shencottah to Punalur	26-11-1904	47·36			
Punalur to Quilon	1-6-1904	45·52			
Quilon to Chakai	1-1-1918	58·76			
Chakai to Trivandrum Central	4-11-1931	5·51			
			157·15		
Quilon-Ernakulam Section—					
Quilon-Kottayam	6-1-1958	95·47			
Kottayam-Ernakulam	17-10-1956	59·91			
Ernakulam to Cochin Harbour Terminus	15-5-1960*	4·07**			** A length of 1·79 kilometres is under Cochin Port authorities hence it is not included in the totals shown in columns 4 and 5.
			157·66		
Virudhunagar—Manamadurai Branch—					
Virudhnnagar-Aruppukottai	5·9-19[illegible]3	21·89	21·89		
TOTAL OPEN KILOMETRAGE (1·000 METRE GAUGE)				6,093 83	
Double Line—					
Poona to Ghorpuri	2-3-1934	1·85			
Madras Beach to Madras Egmore		4·17§			§Electrified.
Golden Rock to Tiruchchirappalli Junction		3·62	9·64		
Madras Egmore to Tambaram		25·02‡	25·02	34·66	‡ Two lines electrified.

DETAILS OF CONSTRUCTION

(*a*) *Northern Region*

Permanent way.—The following sections are laid with 29·76 kilograms/metre flat footed rails laid on wooden, steel trough and CST/9 sleepers.

(1) Vascoda-gamda to Vijayawada.
(2) Londa to Poona.
(3) Bangalore City to Arsikere.
(4) Arsikere to Hubli.
(5) Bangalore City to Nanjangud Town.

SOUTHERN RAILWAY SYSTEM—contd.

(*iv*) SOUTHERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

DETAILS OF CONSTRUCTION—*contd.*

(6) Bangalore City to Hindupur.

(7) Miraj to Kolhapur excepting a length about 1·50 kilometres, which is laid with 20·46 kilograms/metre flat footed rails on steel trough sleepers.

(8) Guntakal to Dharmavaram excepting a length of about 16 kilometres which is laid with 37·13 kilograms/metre flat footed MRC rails on hardwood and CST/9 sleepers for a length of 15 kilometres and with 24·80 kilograms/metre 'R' flat footed rails on CST/9 sleeprs for about 1 kilometre.

(9) Guntur to Macherla.

The following sections are laid with 24·80 kilograms/metre flat footed rails laid on wooden, steel trough and CST/9 sleepers.

(1) Dharmavaram to Pakala.

(2) Pakala to Katpadi.

(3) Pakala to Renigunta excepting a length of 11 kilometres which is laid with 29·76 kilograms/metre A.S.C.E. rails on wooden sleepers.

(4) Gadag to Sholapur.

(5) Birur to Talguppa excepting a length of 8·50 kilometres which is laid with 29·76 kilogarms/metre 'R' flat footed rails on CST/9 sleepers.

(6) Mysore to Arsikere excepting a length of about 17 kilometres which is laid with 29·76 kilomgrams/metre 'R' flat footed rails on wooden sleepers.

Nanjangud town to Chamrajanagar, Bellary to Rayadrug and Gunda Road to Kottur sections are laid with 20·46 kilograms/metre flat footed rails on wooden and steel trough sleepers.

Hospet to Gunda Road laid with 29·76 kilograms/metre flat footed second hand rails on wooden sleepers.

Gunda Road to Samehalli laid with 29·76 kilograms/metre flat footed second hand rails and 20·46 kilograms/metre, flat footed rails on wooden and steel trough sleepers.

Chickjajur to Chitradrug, Miraj to Sangli, Alnavar to Dandeli Sections are laid with 20·46 kilograms/metre 29·76 kilograms/metre flat footed rails on wooden and steel trough sleepers.

Ballast—The line is ballasted with stone, gravel, sand and moorum.

Fencing—The lines from Hospet to Kottur, Bellary to Rayadrug, Hotgi to Sholapur, Yeshwantnagar to Samehalli, the Chickjajur-Chitradurg, Birur Shimoga and Shimoga-Talaguppa extensions are unfenced, those from Pakala to Dharmavaram, Katpadi to Gudur and Vijayawada to Masulipatam are fenced only at stations, and the rest are partially fenced.

Curves—On main lines the sharpest curve has a radius of 168 metres on Miraj to Poona. On branches the sharpest curve has a radius of 146 metres on Grenda Road to Samehalli Section.

Gradients—The ruling gradient is 1 in 100, except for a short length between Hospet and Papinayakanahalli where the gradient is 1 in 91-92 on the Braganza Ghats between 1·61 kilometre and 4·83 kilometre on the main line where the gradient is 1 in 40, and between Gunda Road and Yeshwantnagar where the gradient is 1 in 41, and on the sections between Hospet and Kottur, Bellary and Rayadrug and Yeshwantnagar to Samehalli, where it is 1 in 60.

The ruling gradient is 1 in 100 on Bangalore-Harihar and Yesvantapur Mysore Frontier sections except in the Ghat Section where it is 1 in 89, 1 in 70 on the Bangalore extension, 1 in 80 on extension and Birur-Shimoga section, 1 in 95 on the Arsikere extension and 1 in 100 on the Chickjajur-Chitradurg section and Shimoga-Talaguppa extension.

(*b*) *Southern Region*

Permanent way.—The following sections are laid with 37·13 kilograms/metre flat footed rails on wooden and steel trough sleepers.

1. Madras Beach to Madras Egmore (double line electrified).
2. Madras Egmore to Tambaram (double line—two lines are electrified).
3. Tambaram to Chingleput (Tambaram-Vandalur Section electrified).
4. Velvar Kottai (kilometres 4·19/13) to Cholavandan (kilometres 477/11) on Tiruchchirrappalli to Madurai Section.
5. Dindigul to Pollachi.

The following sections are laid with 29·76 kilograms/metre flat footed rails laid on wooden, steel trough and CST/9 sleepers.

1. Chingleput to Tiruchchirappalli (Main line and Chord line).
2. Tiruchchirappalli to Manamadurai.
3. Tiruchchirappalli to Virudhunagar excepting for a length of 58 kilometres which is laid with 37·13 kilograms/metre rails on wooden and steel trough sleepers.
4. Madurai to Manamadurai.
5. Quilon to Ernakulam.
6. Tenkasi to Punalur excepting for a length of 14·50 kilometres from Tenkasi which is laid with 24·80 kilograms/metre flat footed rails laid on wooden, and CST/9 sleepers.
7. Virudhunagar to Aruppukottai.
8. Virudhunagar to Tuticorin.
9. Cuddalore to Vridhachallam excepting for a length of 18 kilometres which is laid with 24·80 kilograms/metre rails on wooden sleepers.

The following sections are laid with 24·80 kilograms/metre rails laid on wooden, steel trough, CST/9 sleepers and CI sleepers.

1. Villupuram and Katpadi excepting for a length of 3 kilometres which is laid with 29·76 kilograms/metre on wooden sleepers.
2. Villupuram to Pondicherry excepting for a length of 26 kilometres which is laid with 29·76 kilograms/metre on wooden and CST/9 sleepers.
3. Vridhachellam to Salem excepting for a length of 6 kilometres which is laid with 29·76 kilograms/metre and 37·13 kilograms/metre rails laid on steel trough and wooden sleepers respectively.
4. Tiruchchirappalli to Tiruvarur.

SOUTHERN RAILWAY SYSTEM—contd.

(*iv*) SOUTHERN RAILWAY (METRE GAUGE—1·000—METRE)—*concld.*

DETAILS OF CONSTRUCTION—*contd.*

5. Tiruvarur to Nagore.
6. Tiruvarur to Tiruthuraipundi.
7. Tirunelveli to Maniyachi.
8. Tirunelveli to Tenkasi excepting for a length of 12 kilometres which is laid with 29·76 kilograms/metre rails on CST/9 sleepers.
9. Punalur to Trivandrum Central.

Peralam to Karaikkal, Nidamangalam to Mannargudi and Tiruthuraipundi to Point Calimere sections are laid with 20·46 kilograms/metre flat footed rails on wooden and steel trough sleepers.

Mayuram to Tranquebar section is laid with 27·28, 20·46 and 19·84 kilograms/metre flat footed rails on wooden sleepers.

Tiruthuraipundi to Karaikkudi is laid with 29·76, 24·80 and 20·46 kilograms/metre rails on wooden, steel trough, CST/9 and CI sleepers.

Manamadurai to Dhanushkodi and Pamban to Remeswaram sections are laid with 29·76 kilograms/metre flat footed rails 24·80, 39·68 kilograms/metre Bull headed rails (second class) laid on steel trouhgh, CST/9 and CI sleepers.

Madurai to Bodinayakkanur—Pollachi to Palghat sections are laid with 29·76, 24·80 kilograms/metre rails laid on wooden, CST/9 steel trough and CI sleepers.

Pollachi to Coimbatore section is laid with 39·68 kilograms/metre Bull headed rails and 29·76 kilograms/metre flat footed rail on CI and wooden sleepers respectively.

Tirunelveli to Tenkasi section is laid with 29·76 kilograms/metre flat footed 'R' rails over CST/9 and 24·80 kilograms/metre Bull headed rails on CI sleepers.

Tirunelveli to Tiruchendur is laid with 20·46 and 19·84 kilograms/metre flat footed rails on wooden and steel trough sleepers.

Fencing—The line is fenced, with the exception of the Villupuaram-Katpadi, Madurai, Mandapam, Pamban Dhanushkodi Mayuram-Tranquebar, Tiruthuraipundi-Point Calimere Sections, Villupuram Tiruchchirappalli Chord, Virudhunagar-Tenkasi Chord, Dindigul-Pollachi Section, Cuddalore-Vriddhachalam Section Tiruchchirappalli Manamadurai Jn. Chord and Quilon-Ernakulam Section which are fenced only at stations.

Salem-Attur-Vriddhachalam Podanur-Pollachi and Pollachi-Palghan Sections have no fencing either alongside the line or around station yards.

NOTE—The fencing except in the suburbs, industrial areas in immediate neighbourhood of important level crossings and around station yards are gradually removed in terms of Railway Board's No. 649-W of September 1937.

Curves—On the main line the sharpest curve has a radius of 137 metres on Shencottah—Quilon section. On branches the sharpest curve has a radius of 152 metres on Tanjavur to Nagore branches. On Nilgiri Mountain Railway the sharpest curve is of 97 metres radius.

Gradients—The ruling gradient of the greater part of the line is 1 in 200 except the following :—

1 in 197 between Tambaram and Vandalur. } On the main line.
1 in 150 between Thanjaur and Alakhudi. }
1 in 167 between Pandiyapuram and Kailasapuram on the Maniyachi-Tuticorin Section.
1 in 160 between Adirampatnam and Sendakottai on the Arantagi branch.
1 in 100 on the Villupuram-Katpadi, Villupuram-Cuddalore, Cuddalore-Vriddhachalam, Salem-Vriddhachalam, Tiruchchirappalli-Madurai Dindigul-Pollachi, Pollachi-Palghat and Quilon Ernakulam Sections.
1 in 70 on the Podanur-Pollachi section.

The ruling gradient on the Nidamanagallm-Mannargudi branch is 1 in 400 and that of Pamban-Rameshwaram branch is 1 in 300. On the Nilgiri Mountain Railway the steepest gradient is 1 in 12·28 on rack section and 1 in 25 in the adhesive section.

CONTRACTS, RATES & FARES—As noted under Southern Railway—Broad gauge.

STATISTICS OF WORKING

Table C.—Southern Railway (metre gauge—1·000 metre)

For purposes of statistics for the year 1951-2, the Southern Railway has been assumed to have been integrated on 1 April 1951 (instead of 14 April 1951).

Year 1	Route kilometrage open at end of each year 2	Total capital outlay, including suspense, to end of each year, i.e. outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction 3	Gross earnings 4	Net earnings 5	Percentage of net earnings on total capital outlay or capital-at-charge, given in column (3) 6	Payment to General Revenues 7	Gain or loss to the State pertaining to each year 8	Earnings per route Kilometres per week 9	Proportion of expenses to earnings 10
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1951-2	6,446·66	62,87,35,805	21,67,97,218	3,93,72,305	6·26				81·84
1952-3	6,508·11	61,79,56,258	†	†	†	†	†	643	†
1953-4	6,540·65	63,47,07,645	†	†	†	†	†	†	†
1954-5	6,593·40	66,09,43,896	20,73,19,287	56,82,480	0·86	†	†	603	97·26
1955-6	6,615·37	67,16,34,434	22,34,92,000	—31,03,000	—0·46	†	†	650	101·39
1956-7	6,675·29	69,99,57,784	23,49,64,000	87,71,000	1·25	†	†	677	96·27
1957-8	6,688·53	74,30,18,004	23,92,48,000	—3,88,60,000	—5·23	†	†	688	116·24
1958-9	6,690·88	71,05,82,247	24,62,60,578	—3,03,21,755	—4·27	†	†	708	112·31
1959-60	6,692·00	70,35,65,652	26,25,20,560	—6,13,197	—0·09	†	†	754	100·23
1960-1	6,694·39	70,08,62,310	28,43,22,170	—1,80,97,120	—2·57	†	†	817	106·35
1961-62	6,700·08	74,64,59,704	30,90,37,195	92,64,750	1·24	†	†	887	97·00
1962-63	6,647·60*	76,84,13,440	32,46,97,810	—68,39,979	—0·89	†	†	939	102·10
1963-64	6,729·70	83,52,34,309	35,01,28,036	86,09,662	1·03	†	†	1,001	97·94

*The decrease in route kilometres during 1962-63 as compared to route kilometres for 1961-62 is due to conversion of the metre gauge section, Vijawavada-Masulipatam into broad gauge.

NOTE—The figures of capital-at-charge are provisional pending closing of prepartition accounts and the finalization of the balances of ex-States railways brought forward on 1st April 1950.

†Included under broad gauge (1.676 metres) in table 'A'. Separate gauge-wise figures not recorded.

SOUTHERN RAILWAY SYSTEM—contd.

NANJANGUD TOWN CHAMARAJANAGAR RAILWAY (METRE GAUGE—1·000 METRE)

This Railway has been constructed from funds provided by the Mysore District Board.

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4
Nanjangud to Chamarajanagar	27-8-1926	35·87	35·87

DETAILS OF CONSTRUCTION

Permanent way—The permanent way consists of selected second-hand 20·46 kilograms/metre ($41\frac{1}{4}$ lbs./yard) steel flat footed B.S.S. rails laid on Mysore teak sleepers.

Ballast—The line is ballasted with stone-moorum, gravel and sand.

Fencing—The line (except for a very short length) is unfenced.

Gradients—The ruling gradient is 1 in 100.

AGREEMENT

The Nanjangud-Chamarajanagar section is owned by the Mysore District Board. This line is being maintained and worked under the terms of an agreement, dated 4th December 1931.

MAIN PROVISIONS OF AGREEMENT

Land—Provided by Government free of cost.

Government Aid—The Government guarantee repayment of the loan of eight lakhs of rupees on the conditions set forth in Government Order No. L. 4998-5001—L.B. 129-20-8, dated 3/4 January 1924, which shall be read as forming part of this contract. The said guarantee shall cease and determine on the expiry of 15 years commencing from the date of opening of the Railway line.

Terms of working and distribution of profits—The Government shall receive 65 per cent of the gross earnings of the Railway in addition to 5 per cent of the same for the use of the rolling stock, the balance after meeting the cost of New Minor Works, if any, and Telegraph charges referred to in Clauses 9 and 10, being handed over to the Board every month after the accounts are passed by the Auditor on behalf of Government.

The above percentage may, however, be modified by mutual agreement after a period of 5 years from the date hereof.

Rates and Fares—The Government shall adopt a similar classification to that in force on the Mysore State (now Southern Railway) and shall charge generally such tolls, rates and fares through and local and terminals as are in force on the Mysore State Railway, but within the approved schedule of maxima and minima rates.

Special obligations as to the conveyance of:—

(*a*) Mails, Troops, Police, High Government officials and Government stores.

(*b*) Government bullion and coin and persons in charge thereof.

(*c*) Any special service that the Government may require for any of their own departments or for the departments of the Government of India shall be performed under the same conditions as may, for the time being, be in force on State owned and worked Railways.

Powers of Government to determine Agreement—Government shall have power to purchase the Railway at any time after giving twelve months' notice in any of the following cases:—

(*a*) When the Government consider it desirable that the gauge of the line should be altered and the District Board be unwilling to alter it; or

(*b*) when it is desired to convert the line into a line of through communication ; or

(*c*) when the Government desire to extend the line (without altering the gauge or, making the line part of a through route) and the District Board unable or unwilling to supply the capital for such extension.

In the event of the line being purchased under this clause, the price payable shall be 25 times the average net earning during the three years preceding the purchase or 155 per cent of the Board's share of the capital expenditure on the line whichever may be the greater.

Arbitration—In every case in which any difference shall arise between the Government and the Board touching:—

(*a*) the true intent or construction of this agreement, or

(*b*) anything to be done, suffered or permitted in pursuance of this agreement, or

(*c*) any of the incidents or consequences of this agreement, or

(*d*) any claim relating to any liability, damages, loss, costs or expenses, or

(*e*) any claim relating to the premises or any clause, matter or thing therein contained,

the matter in difference shall be referred to and determined by a Committee of five members, two of whom shall be nominated by the Government, two by the Board and the fifth by the other four and the decision of the said Committee, shall, if unanimous, be final and conclusive between the parties. If the decision is not unanimous, the order of Government on such matters on which there is difference of opinion among the Members of the Committee shall be final and conclusive.

STATISTICS OF WORKING

Year 1	Route kilometrage open at end of each year 2	Total capital outlay 3	Gross earnings 4	Net earnings 5	Percentage of net earnings on total capital outlay 6	Earnings per route kilometre per week 7	Proportion of expenses to earnings 8
	Kilometres	Rs.	Rs.	Rs.		Rs.	
1951-2	35·87	12,09,065	2,14,811	63,333	5·24	114	70·52
1952-3	35·87	12,09,065	1,98,386	58,406	4·83	106	70·56
1953-4	35·87	12,09,065	2,11,567	62,360	5·16	113	70·57
1954-5	35·87	12,09,065	1,60,565	47,060	3·89	85	70·69
1955-6	35·87	12,09,065	2,19,983	64,885	5·37	..	70·50
1956-7	35·87	12,09,065	1,99,328	58,689	4·85	..	70·56
1957-8	35.87	12,09,065	1,79,752	51,097	4·23	..	71·56
1958-9	35·87	12,09,065	1,90,193	55,368	4·58	102	70·89
1959-60	35·87	12,15,857	1,77,665	52,217	4·29	95	70·60
1960-1	35·87	12,22,307	1,93,525	53,932	4·41	104	72·13
1961-62	35·87	12,30,655	2,20,323	63,692	5·17	118	71·09
1962-63	35·87	12,33,206	2,42,356	70,950	5·75	130	70·72
1963-64	35·87	12,65,195	2,63,698	77,354	6·11	141	70·66

(*i*) The line has been purchased by the Government of India with effect from the 1st April 1964 for a sum of Rs. 4,88,060.

(*ii*) Statistics prior to 1951–52 are merged with those of the Mysore State Railway as given in the Supplement to the History of Indian Railways.

SOUTHERN RAILWAY SYSTEM—concld.

(x) SOUTHERN RAILWAY (NARROW GAUGE—0·762 METRE)

PROGRESS IN OPENING

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
Bangalore-Chik Ballapur branch—					
Bangalore City to Yeshvantpur	7-1-1918	5·36			
Yeshvantpur to Yelahanka	1-2-1917	0·56			
Yelahanka to Devanhalli	6-4-1915	23·66			
Devanhalli to Chik Ballapur	1-8-1915	22·13	51·71		
Kolar District branch—					
Bowringpet to Kolar	15-12-1913	16·91			
Kolar to Chintamani	6-3-1916	47·94			
Chintamani to Chik Ballapur	8-11-1916	37·45	102·30		
Total .				154·01	

DETAILS OF CONSTRUCTION

Bangalore-Chik Ballapur Branch

Permanent way—The permanent way consists of second hand 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails, purchased from the Madras and Southern Mahratta Railway Company laid on steel sleepers. Teak sleepers have been used in station yards.

Ballast—The line is for the present packed upon gravel ballast.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 109 meters radius.

Gradients—The steepest gradient is 1 in 100.

Kolar District Branch

Permanent way—The permanent way consits of 20·46 kilograms/metre (41¼ lbs./yard) second hand rails for 65·98 kilometres, and 20·46 kilograms/metre (41¼ lbs./yard) new rails, from the Tata Iron and Steel Company, for the remainder. The rails are laid on steel sleepers for 59·55 kilometres, and on wooden sleepers for 43·45 kilometres. The wooden sleepers are mostly teak, a small percentage being jalare and jambe.

Ballast—The line between Bowringpet and Kolar is ballasted with sand and between Kolar and Chintamani boxed with good gravelly soil. Between Chintamani and Chik Ballapur the ballast consists of moorum, except at bridge approaches where broken stone is used.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 218 metre radius.

Gradients—The ruling gradient is 1 in 100.

CONTRACTS AND RATES AND FARES—As noted under Southern Railway Broad Gauge.

STATISTICS OF WORKING

Table D—Southern Railway (Narrow gauge—0·762 metre)

Year	Route kilometrage open at end of each year	Total capital outlay, including suspense to end of each year, *i.e.*, outlay on (*i*) lines open, and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Payment to General Revenues	Gain or loss to State pertaining to each year	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
	Kilometres	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1951-2 . . .	164·47	49,59,662	10,12,621	5,24,597	10·58	†	†	117	48·19
1952-3 . . .	164·47	49,59,662	†	†	†	†	†	†	†
1953-4 . . .	154·01	49,59,662	†	†	†	†	†	†	†
1954-5 . . .	154·01	49,52,319	5,96,000	—6,68,580	—13·50	†	†	74	212·18
1955-6 . . .	154·01	49,52,319	6,18,000	—5,90,000	—11·91	..	..	77	195·47
1956-7 . . .	154·01	49,52,319	7,06,000	—3,70,000	—7·47	..	..	88	152·41
1957-8 . . .	154·01	49,52,319	6,91,000	—5,52,000	—11·15	..	..	86	179·41
1958-9 . . .	154·01	51,58,568	5,84,478	—3,56,104	—6·90	..	..	73	160·93
1959-60 . . .	154·01	51,01,044	5,77,340	—7,99,450	—15·67	..	..	72	238·47
1960-1 . . .	154·01	51,01,044	7,20,716	—5,62,851	—11·03	..	..	90	178·10
1961-62 . . .	154·01	51,01,044	7,94,043	—4,29,942	—8·43	..	..	99	154·14
1962-63 . . .	154·01	51,01,044	8,31,944	—8,86,886	—17·38	..	..	104	206·60
1963-64 . . .	154·01	51,90,758	8,00,163	—7,10,703	—13·96	..	..	100	188·82

†Included under broad gauge (1·676 metres) in table 'A.' Separate gauge-wise figures not recorded.

NOTE—The figures of capital-at-charge are provisional pending closing of prepartition accounts and the finalisation of the balance of the ex-States railways brought forward on 1st April 1950.

CHAPTER VIII

SOUTH EASTERN RAILWAY SYSTEM

Headquarters—Garden Reach, Calcutta

The system comprises of broad gauge (1·676 metres) and narrow gauge (0·762 metre).

Administrative Set Up.—The South Eastern Railway Administration is headed by the General Manager who is assisted by the Senior Deputy General Manager and other Heads of Departments, *viz.*, Chief Commercial Superintendent, Chief Electrical Engineer, Chief Engineer, Chief Engineer (Construction), Chief Engineer (Projects and Development), Chief Mechanical Engineer, Chief Medical Officer, Chief Operating Superintendent, Chief Personnel Officer, Chief Security Officer, Chief Signalling and Tele-communication Engineer, Controller of Stores, Financial Adviser and Chief Accounts Officer, and Financial Adviser and Chief Accounts Officer (Construction).

On this Railway, the divisional pattern of administration was introduced during 1962-63. As a precursor to divisionalisation, Bilaspur, Chakradharpur and Adra Districts were progressively regionalised in the initial stages. This was followed up with the creation of seven Divisions, with headquarters at Khargpur, Adra, Bilaspur, Chakradharpur (in June, 1962), Khurda Road and Waltair (between June and October, 1962) and Nagpur (in March, 1963). Except for Nagpur, Khurda Road and Waltair Divisions, the charges of which are held by Divisional Superintendents in the Junior Administrative Grade, the charges of other Divisions are held by the Divisional Superintendents in the Inter Administrative Grade.

Brief History

On the 14 April 1952, the old Bengal Nagpur Railway system was merged with the truncated East Indian Railway including Sealdah division extending upto Mughalsarai, to form the Eastern Railway. The combined work load of this system was the heaviest amongst the Zonal Railways and this, together with the vast developments envisaged in the Five Year Plans, necessitated a reduction in the size of the Zone, and on the 1st August 1955 the Bengal Nagpur Railway portion was again bifurcated to constitute the South Eastern Railway.

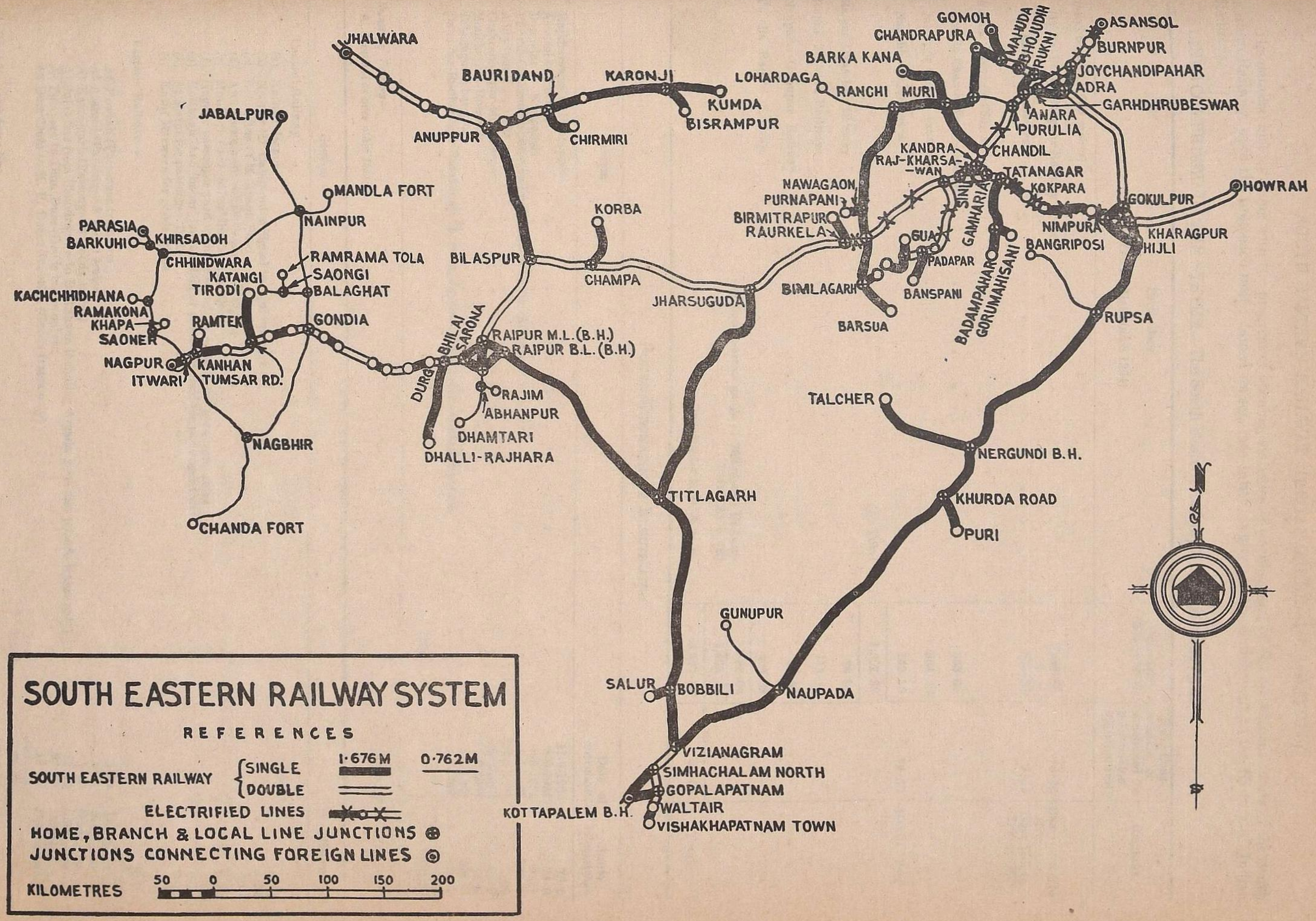
Bengal Nagpur Railway—The old Bengal Nagpur Railway was formed in March 1887. Under the contract with the Government, the Company took over the metre gauge line, Nagpur Chattisgarh State Railway, of 240 kilometres in length which according to one of the conditions, was to be converted into broad gauge. The idea of this system was first mooted in 1863 when Sir Richard Temple, then Chief Commissioner of the Central Provinces (now Madhya Pradesh), recommended the construction of a light tramway from Nagpur to the granary of Chattisgarh. The project was again considered and eventually in 1878 sanction was accorded to the construction of a metre gauge line from Nagpur to Rajnandgaon, which was opened to traffic in 1882.

With a view to linking up Nagpur with Sitarampur on the East Indian Railway at Asansol, about 220 kilometres from Calcutta, sanction was accorded for a broad gauge line in 1884, and by 1885 land had been acquired and considerable progress made in earthwork but the work had to be suddenly stopped, as all the available funds with the Government had to be diverted for mobilization on the North West Frontier. Government were persuaded to allow private enterprise to prosecute the scheme and in response to this the Bengal Nagpur Railway Company was formed in England. The Bengal Nagpur Company took over the Katni-Umaria State Railway, with a view to extending it to meet the projected Nagpur-Sitarampur main line. Accordingly, the Katni Umaria line was taken over in April 1888 and this was the first broad gauge line to form part of the Bengal Nagpur Railway. By 27th November, that year the conversion of the line from Nagpur to Rajnandgaon was completed. Eventually, however, it was decided to join up on the east with the East Indian Railway at Asansol instead of Sitarampur. The entire main line Nagpur-Gondia-Raipur-Bilaspur-Chakradharpur-Sini-Purulia-Asansol as well as the extension of the Katni-Umaria line into Bilaspur, was completed by 18th January 1891—a length of over 1,287 kilometres in about four years.

In 1895, the Sini-Midnapore-Calcutta-Cuttack extension was sanctioned and the line opened for traffic in 1900. In the next year there came in another railway reorganization and amalgamation in which an old railway ceased to exist as a separate unit. This was the State line, the East Coast Railway, which constructed the Puri Branch, the line from Vijayawada to Cuttack via, Samalkot, Vishakhapatnam and Ganjam, with branches to Cocoanada and Jagannath. In 1901, Barang to Vishakhapatnam was merged in the Bengal Nagpur Railway and Madras to Vishakhapatnam in the Madras Railway.

The expansion and growth of the Bengal Nagpur Railway in the Nainpur District and the Bengal-Bihar coalfields has been a development of the early years of the present century. The Raipur-Vizianagram link, started in 1909, was completed only in 1931.

The Bengal Nagpur Railway was brought under direct State-management on 1 October 1944, on the determination of all contracts between the Government and the Company. The Annuppur-Chirimiri section of the Central India Coalfields Railway was treated as an integral part of the Bengal Nagpur Railway with effect from that date. In addition the track and ther assets between kilometres 768/16-17 and 769/19-20 of the North East line of the Madras and Southern Mahratta Railway near Waltair were taken over by the Bengal Nagpur Railway with effect from 10 October 1944. The Parlakimedi and Mayurbhanj Railways, which were worked by the Bengal Nagpur Railway Co. were acquired by the Government of India on 1st February and 1st April 1950, respectively, and merged in the State-managed Bengal Nagpur Railway.


SOUTH EASTERN RAILWAY SYSTEM
REFERENCES
SOUTH EASTERN RAILWAY
SINGLE
DOUBLE
1·676 M
0·762 M
ELECTRIFIED LINES
HOME, BRANCH & LOCAL LINE JUNCTIONS
JUNCTIONS CONNECTING FOREIGN LINES
KILOMETRES
50
0
50
100
150
200
JHALWARA
BAURIDAND
KARONJI
KUMDA
BISRAMPUR
CHIRMIRI
ANUPPUR
JABALPUR
MANDLA FORT
NAINPUR
PARASIA
BARKUHI
KHIRSADOH
CHHINDWARA
RAMRAMA TOLA
KATANGI
SAONGI
TIRODI
BALAGHAT
KACHCHHIDHANA
RAMAKONA
KHAPA
SAONER
RAMTEK
GONDIA
NAGPUR
ITWARI
KANHAN
TUMSAR RD.
NAGBHIR
CHANDA FORT
KORBA
BILASPUR
CHAMPA
BHILAI
SARONA
DURG
RAIPUR M.L. (B.H.)
RAIPUR B.L. (B.H.)
RAJIM
ABHANPUR
DHAMTARI
DHALLI-RAJHARA
JHARSUGUDA
TITLAGARH
GOMOH
MAHUDA
BHOJUDIH
RUKNI
ASANSOL
BURNPUR
CHANDRAPURA
BARKA KANA
LOHARDAGA
RANCHI
MURI
JOYCHANDIPAHAR
ADRA
GARHDHRUBESWAR
ANARA
PURULIA
CHANDIL
KANDRA
RAJ-KHARSA-WAN
TATANAGAR
SINI
KOKPARA
GAMHARIA
NAWAGAON
PURNAPANI
BIRMITRAPUR
RAURKELA
GUA
PADAPAR
BANSPANI
BIMLAGARH
BARSUA
BADAMPAHAR
GORUMAHISANI
NIMPURA
BANGRIPOSI
GOKULPUR
HOWRAH
KHARAGPUR
HIJLI
RUPSA
TALCHER
NERGUNDI B.H.
KHURDA ROAD
PURI
GUNUPUR
SALUR
BOBBILI
NAUPADA
VIZIANAGRAM
SIMHACHALAM NORTH
GOPALAPATNAM
KOTTAPALEM B.H.
WALTAIR
VISHAKHAPATNAM TOWN
N
S

SOUTH EASTERN RAILWRAY SYSTEY—contd.

SOUTH EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)

The detailed history along with the progress of opening, statistics of working etc., of the constituent units of the South Eastern Railway, upto the time each unit retained its separate entity, is given in the Supplement to the History of Indian Railways.

LINES COMPRISED IN THE SYSTEM—The South Eastern Railway System is made up of—

Particulars (As on 31st March 1964)	Open line (Kilometres)	Under Construction or sanctioned for construction (Kilometres)	Remarks
Broad Gauge (1·676 metres)			
(1) Ex-Bengal Nagpur Railway Proper	3,949·94	16·70	Champa-Korba Extension
(2) East Coast Railway	522·17	4·40	Tiger Hill to Duman Hill
Narrow Gauge (0·762 metre)			
Gondia Chanda Fort extension	353·06	..	
Jabalpur Gondia extension	504·46	..	
Nagbhir Chhindwara	149·80	72·55	Haldia Port link
(A) Total	1,007·32	..	
Raipur Dhamtari Railway	88·92	..	
Rupsa Talband Railway	113·68	..	
Naupada Gunupur Railway	90·61	..	
Purulia Ranchi Railway	104·83	..	
(B) Total narrow gauge (0·762 metre) Railway	398·04	..	
Total (A) + (B)	1,405·36	..	
Grand total B. G. & N. G.	5,877·47	93·65	Total

ROUTE KILOMETRAGE ELECTRIFIED

Section	Date of energisation	Route kilometrage
Rajkharswan to Dangoaposi	11-8-1960	75·0
Asansol to Purulia	8-6-1961	74·0
Damodar to Kalipahari	8-6-1961	9·37
Purulia-Chakradharpur-Kandra Gomhoria to Sini-Adityapur	4-7-1961	156·0
Adityapur-Tatanagar	22-7-1961	2·00
Chakradharpur-Monoharpur	3-2-1962	61·0
Monoharpur-Rourkela	12-2-1962	41·0
Tatanagar-Khargpur	4-1-1963	128·0
Damodar-Radhanagar-Ramkanali-Chaurasi, Joychandipahar-Adra-Garhdhrubeswar	4-7-1963	26·0
Total		572·37

Running Powers—

A. *Home line over other lines—*

Section	Kilometres	
Central Railway		
(*a*) Katni Bilaspur	6·44	
(*b*) Nagpur 'D' Cabin outer Signal to Ajni up yard	4·04	
(*c*) Bahar line of Motibagh Shed to Ajni up yard	4·02	
(*d*) Ajni Down yard to 'D' Cabin outer Signal	3·88	
(*e*) Motibagh shed 'bahar' line to Ajni Down yard	3·86	
(*f*) Nagpur passenger yard to outer signal 'D'—Cabin for passenger trains	1·63	
(*g*) Motibagh shed 'bahar' line to Nagpur passenger shed for passenger trains	0·87	
(*h*) At Katni for passenger Trains	0·55	
(*i*) Katni Marwara for goods trains	2·16	
	27·45	
Eastern Railway—		
At Howrah (Passenger trains only)	1·75	Double line.
At Asansol (Passenger & goods trains)	0·80	Single line.
At Katrasgarh (Passenger & goods trains)	1·06	Single line.
At Joint line from Chandrapura to Barkakana including Argada Branches (Goods trains only)	87·53	Single line.
At Tikapara to Dum Dum (Goods trains only)	26·83	Double line.
At Dum Dum to K. P. Docks Junction (Goods trains only)	19·10	Double line.
Total	137·07	

B. *Other line over home line—*

Central Railway—Nagpur to Itwari Bazar (for goods trains only)	2·61	
Southern Railway—Gopalapatnam to Vishakhapatnam	10·88	
Total	13·49	

SOUTH EASTERN RAILWAY SYSTEM—contd.

SOUTH EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Bengal Nagpur Railway Portion—					
Main line—					
Asansol to Damodar	12-6-1889	7·43*			*7·44 and 30·27 kilometres which were handed over to Eastern Rly. on 28-5-1952 and 1-8-1953 respectively re-transferred to S. E. Railway on 1-4-1955.
Damodar to Purulia	14-2-1889	74·03*			
Damodar to Kalipahari	26-7-1963	9·37			
Purulia to Chakardharpur	22-1-1890	115·60			
Chakardharpur to Goilkera	15-5-1890	34·07			
Goilkera to Jharsuguda	1-2-1891	168·85			
Jharsuguda to Raigarh	20-4-1890	69·76			
Raigarh to Bilaspur	10-2-1890	132·34			
Bilaspur to Raipur	10-1-1881	109·62			
Raipur to Raj-Nandgaon	4-12-1888	69·41			**These are the dates of opening in sections of the original metre gauge (1·000 metre) lines which were converted to the broad gauge (1·676 metres) and re-opened on the 27 Nov. 1888.
Raj-Nandgaon to Nagpur	1880 1881 1882 **	233·60	1,024·08		
Adra Avoiding Line	24-3-1924	3·59			
Kandra—Gomharria Chord	2-12-1919	10·23			
Anara—Rukni Chord	3-5-1920	8·05			
Chetudih—Dharmaband and Kharkhari Chord	18-2-1927 & 7-12-1927	6·04	27·91		
Extensions—					
Matya BH to Garhdhrubeshwar	2-9-1926	3·52	3·52		
Branches—					
Gua Branch—					
Rajkharsawan (Amda) to Dangoaposi	17-1-1924	75·14			
Dangoaposi to Gua	20-2-1925	30·88			
Barabil Branch	16-2-1926	6·92			
Barabil to Bolanikadan (Panposh—Gorge)	19-4-1960	9·33			
Noamundi to Banspani	18-4-1958	28·04	150·31		
Bondamunda—Dumrao	20-4-1960	69·22			
Dumaro—Barsua	18-9-1961	2·82	72·04		
Birmitrapur Branch—					
Rourkela to Koel Bank	17-9-1926	3·93			
Kool Bank to Birmitrapur	21-1-1922	25·23	29·16		
Sambalpur Branch—					
Jharsuguda to Sambalpur	1-2-1893	49·53			
Champa to Korba	20-4-1956	38·00	87·53		
B. D. R. Branch Bhillai—Dhalli-Rajhara Sec.	14-5-1958	85·54			
Bhillai—Ahiwara (Dearjhal)	1-4-1960	19·96	105·50		
Katni Branch—					
Bilaspur to Birsinghpur	1-2-1891	227·85			
Birsinghpur to Umaria	11-5-1890	29·74			
Umaria to Katni	2-11-1886	52·22†			†Transfer of 6·57 kilometres to Central Railway on 31-10-1957.
Katni to Marwara JN.	1-1-1901	0·71§	310·52		§Reduction in kilometrage from 0·90 to 0·71 is due to the transfer of 0·19 kilometre to the Central Railway during 1963-64.
Bauridand-Bishrampur (Karonji) Branch	1-10-1962	99·97	99·97		
Carried over				1 910·54	

SOUTH EASTERN RAILWAY SYSTEM—contd.

(i) SOUTH EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway	Date of opening	K re	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward				1,910·54	
Raipur-Vizianagram Railway—					
Vizianagram to Bobbili	24-12-1908	53·98			
Bobbili to Parvatipuram	8-3-1909	23·75			
Parvatipuram to Jumadipeta	31-3-1930	31·78			
Jumadipeta to Rayaghada	12-4-1930	15·24			
Rayaghada to Theruvali	31-3-1931	18·97			
Length from centre of Parvatipuram Stn. to Yard which has been opened as part of the Main Line	8-3-1909	0·85			
Raipur Bye-pass	18-5-1958	9·48			
Raipur to Jonk	15-11-1929	101·18			
Jonk to Harishankar Rd.	30-3-1930	41·12			
Harishankar Rd. to Titilagarh	30-9-1930	56·02			
Titilagarh to Theruvali	20-12-1931	112·87			
R.V. Ry. entry line to Raipur	16-5-1930	5·41	470·65		
Tumsar—Tirodi BG conversion Tumsar Rd. to Tirodi	1-9-1929	47·19	47·19		
Kalumna-Itwari-Nagpur Section—					
Kalumna to Nagpur via Itwari	15-3-1911	6·18	6·18		
Ramteh Branch—					
Kanhan to Dhattapahar	26-9-1907	23·75	23·75		
Sanctoria Coal Branch—					
Damodar to Sanctoria Collieries (Radhanagar Branch).	12-6-1889	12·57*			*This line, once transferred to the Asansol Division of the Easter Railway on 28-5-1952, has been re-transferred to the South Eastern Railway on 1-4-1955.
New Radhanagar Link	30-10-1956	1·30	13·87		
Chaurashi Branch—					
Ramkanali to Nadiha Colliery Siding No. 7	1-2-1903	10·01	10·01**		**Transferred to Asansol Division of the Eastern Railway on 1-8-1953 but it has been retransferred to S. E. Rly. on 1-4-1955.
Calcutta Extension Main Line—					
Sini to Surdiah	1-6-1898	152·66†			†4·13 kilometres adjusted after re-verification during 1959-60.
Surdiah to Khargpur	1-6-1898	6·24			
Khargpur to Khal Bridge	17-12-1898	71·81			
Dinan Khal Bridge to Rajapur Khal	24-5-1900	27·10			
Rajapur Khal to Tikiapara (Howrah)	14-12-1900	25·93	283·74		
Gokulpur—Hijli Chord—					
Hijli to Nimpura	14-1-1946	7·21			
Nimpura to Gokulpur	14-1-1946	8·14	15·35		
Fort Gloster Branch	1900—1917	2·51			
East Rupnarain Bank	1900—1917	1·30			
Kidderpore Port Line	1900—1917	0·53	4·34		
Calcutta Extension Branches—					
Shalimar Branch—					
Santragachi to Shalimar	15-3-1901	5·07	5·07		
Carried over				2,790·69	

SOUTH EASTERN RAILWAY SYSTEM—contd.

(*i*) SOUTH EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward				2,790·69	
Bengal Nagpur Railway Portion—contd.					
Tatanagar—Gurumahisani Branch—					
Tatanagar to Onlajori	1-2-1911	55·01			
Onlajori to Gurumahisani	6-4-1911	9·85			
Onlajori to Badampahar (including Salapet branch)	23-10-1922	34·15	99·01		
Cuttack Extension Main Line—					
Khargpur to Balasore	17-12-1898	113·59			
Balasore to Cuttack	10-1-1899	177·69	291·28		
Branches—					
Nargundi BH to Talcher	20-1-1927	99·01	99·01		
Jharia Extension Main Line—					
Khargpur to Kosi River	20-12-1899	12·07			
Right Bank of Kosi River to Midnapur	8-6-1901	3·43			
Midnapur to Bhojudih	1-2-1903	184·94			
Bhojudih to Gomoh via Talgoria	1-1-1907	41·81			
Sudamdiu BH to Bhowrah Block Hut	17-2-1914	3·31	245·56		
Branches and Extensions on Jharia Coalfields—					
Bhojudih—Bhaga—Malkera Loop—					
Bhojudih to Bhaga	20-4-1903	11·99			
Bhaga to Malkera	1-9-1903	14·15			
Malkra to Mohuda	15-6-1904	5·07	31·21		
Bhowah Branch	14-5-1906	4·75	4·75		
Bhojudih—Pathardih Link	1-2-1906	1·35	1·35		
Katras Connection	10-1-1915				
Malkera to Katras	24-8-1903	0·97			
Khanoodih to Katras	1-1-1907	3·07	4·04		
Muruldih Branch—					
Mohuda to Muruldih Colliery	1-1-1907	5·89	5·89		
Jamadoba Loop	16-9-1903	8·51	8·51		
Kendwa Branch	10-10-1899	4·02	4·02*		*These lines, once transferred to the Asansol Division of the Eastern Railway on 28-5-1952 were retransferred to the South Eastern Railway on 1-4-1955.
Aldih Branch	1-2-1906	2·61	2·61*		
Bokharo—Ramgarh Extension—					
Section I—Mohuda to Chandrapura	27-11-1913	14·65	14·65		
Section II—Barkakana to Chandil	31-3-1927	115·23	115·23		
Carried over				3,717·81	

SOUTH EASTERN RAILWAY SYSTEM—contd.

(*i*) SOUTH EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Brought forward				3,717·81	
Bengal Nagpur Railway Portion—concld.					
Kotshila to Chandrapura	1-4-1960	62·13			
Muri to Ranchi	22-4-1960	65·08	127·21		
Bhulanbaree Link	5-3-1915	1·22	1·22		
Bobbili—Salur Branch	1-5-1913	17·06	17·06†		†Dismantled during the war but relaid.
Central India Coalfield Railways—					
Anuppur to Bijuri	17-6-1928	47·65			
Bijuri to Manendragarh	25-4-1929	16·77			
Manendragarh to Chirmiri	23-1-1931	22·22	86·64		
Total open kilometrage—B. N. Rly. Proper			3,949·94		
East Coast Railway, Northern Section—					
Main Line—					
Cuttack to Bhubaneswar	1-2-1897	27·68			
Bhubaneswar to Khurda Road	20-7-1896	18·48			
Khurda Road to Rambha	1-3-1896	99·55			
Rambha to Berhampur (Ganjam)	1-9-1895	47·54			
Berhampur (Ganjam) to Palasa	1-4-1895	74·01			
Palasa to Naupada	17-12-1894	24·78			
Naupada to Vizianagram	20-9-1894	117·39			
Vizianagram to Waltair and Gopalapatnam (including wharf).	15-7-1893	66·55			
Branches—					
Waltair Avoiding Line (Simachalam—Kottavalasa BH Madras Line connection).	30-3-1945	2·99	478·97		
Puri Branch—					
Khurda Road to Puri	1-2-1897	43·20	43·20		
Total East Coast Railway Northern Section			522·17		
Total Open Kilometrage, broad gauge (1·676 metres)				4,472·11	
Double Line					
Ex-B. N. Rly. Portion					
Kharagpur Division—					
Howrah (Tikiapara) to Santragachi	2-12-1900	5·95			
Santragachi to Bauria	17-6-1902	16·50			
Bauria to Khargpur	15-3-1907	91·12			
	22-9-1928	0·19			
Rupnarayan Bridge	23-3-1933	0·84			
Shalimar Branch	15-3-1901	5·07			
Khargpur to Kosi Bridge	28-7-1924	6·20			
	1-1-1945	1·75			
Midnapore to Tantigoria B.H.	13-1-1928	2·20			
Midnapore to Vishnupur	1-1-1945	2·22			
Khargpur to Surdiah	10-2-1945	7·90			
Chakuria to Kokpara	16-2-1945	7·88	147·82		
Chakardharpur District—					
Sini to Chakardharpur	25-1-1924	35·25			
Entry to Chakardharpur yard on north side	27-9-1950	1·53			
Chakardharpur to Golkera	28-5-1925	33·46			
Golkera to Manharpur	25-4-1927 28-12-1927 24-12-1929	26·36	96·60		
Panposh to Kalunga	12-5-1959	6·68			
Opening of temporary diversion between Kalunga and Kansbahal.	27-10-1959	2·51			
Manharpur to Bisra	3-10-1958	25·85			
Bamra to Dhutra	30-12-1958	27·89			
Dhutra to Jharsuguda	14-11-1958	8·87	71·80		
Bisra to Rourkela	28-1-1958	14·11			
Tata to Asanboni	28-12-1953	3·17			
Sini to Gumharria	23-2-1956	15·63‡	32·91		‡ 0·82 kilometres adjusted due to Gumharria yard re-modelling during 1956-7.

SOUTH EASTERN RAILWAY SYSTEM—contd.

(i) SOUTH EASTERN RAILWAY (BOARD GAUGES—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Section of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Rajgangpur to Kansbahal	20-6-1959	9·30			
Rourkela to Panposh	12-5-1959	8·08			
Bamra to Garpos	27-7-1959	16·19			
Garpos to Sonakhan	7-10-1959	11·23			
Rajkharswan to Pandrasali	21-12-1958	13·37			
Pandrasali to Jhinkpani	9-7-1958	24·99			
Jhinkpani to Dangoaposi	29-10-1959	37·82			
Dongoaposi to Noamundi	8-7-1958	8·14	129·12		
Khorkhai Bridge to Tatanagar . . .	14-6-1932				
Gomharria to Khorkai Bridge	19-11-1953	3·88			
		5·81			
Increase in double line at Sini & Birbans due to conversion of sidings to UP main line and yard remodelling.	21-4-1956	0·92†			†Adjustment made during the year 1956-7.
Sonakhan to Rajgangpur	31-1-1960	7·31			
Kalunga to Kansbahal	8-12-1959	7·05			
Mandi to Kandra (Portion)	18-11-1924	10·83			
Kandra to Sini	30-3-1958	13·31			
			49·11		
Nagpur Division—					
Kamptee to Kalumna	16-9-1923	6·90			
Durg to Kamptee	31-7-1962	100·97*			*Bilaspur to Durg Section transferred to Bilaspur Division during 1962-63 and 1963-64.
			107·87		
Adra Division—					
Rukni to Gowai	26-10-1922	11·88			
Gowai to Bhojudih	29-3-1925	2·61			
Bankura to Adra	4-1-1916	53·65			
Anara to G. R. B. Section	24-1-1956	5·78			
G. R. B. to J. O. C.	10-1-1958	5·89			
Joychandi-pahar to Ramkanali	29-3-1956	9·25			
Ramkanali to Burnpur Sec.	12-12-1956	26·31			
Bankura to Midnapore	1-1-1945	101·05¶	216·42		¶Transferred from Kharagpur during 1952-53. (+)70·07 kilometres.
Anara—Kandra Branch—					
Anara to Purulia	21-3-1924	25·75			
Purulia to Tamna	19-11-1924	6·84			
Tamna to Kantadih	12-4-1924	7·90			
Kantadih to Nimdih	26-7-1924	30·58			
Nimdih to Kandra	18-11-1924	12·12			
			83·19		
Waltair Division—					
Vizianagram to Simhachalam North	21-5-1962	52·09			
Simhachalam North to Gopalapatnam Block Hut .	1-3-1962	2·56			
Gopalapatnam to Waltair	1-4-1921	6·24	60·89		
Bilaspur Division—					
Jharsuguda to 1B	14-11-1958	89·61			
Raigarh to Kiradimalnagar	15-12-1958	7·24			
Jharradih Sakti—Baraduar	9-4-1959	24·64			
Baraduar to Champa	21-5-1959	15·59			
Himgir to Daghora	17-8-1959	7·34			
Daghora to Raigarh	20-1-1960	30·34			
Bhupdeopur to Robertsganj	4-10-1950	9·09			
Champa to Naila	2-12-1959	10·78			
		98·51**			**Transferred from Nagpur Division during 1962-63 (Raipur sub-divisions) and 1963-64 (Bhilai Sub-division).
Bilaspur to Durg					
Gatora to Bilaspur	25-3-1960	6·13			
Annuppur to Burhar	27-7-1961	21·49			
Burhar to Sahdol	16-9-1961	19·43			
Sahdol to Birsinghpur	14-6-1962	59·55			
Umeria to Chandia Rd.	28-1-1962	19·73			
Jhalwara to New Katni	16-3-1962	24·80			
			444·27		
Total Double line .				1,440·00	

SOUTH EASTERN RAILWAY SYSTEM—contd.

(i) SOUTH EASTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

Details of Constructions

Permanent Way—The line is laid with 34·02, 38·56 and 40·82 kilograms/metre (75, 85 and 90 lbs/yard) flat-footed steel rails on transverse wooden, steel, cast iron pot and plate sleepers.

Ballast—The line is ballasted throughout with stone, except for some portions of the Talcher branch which have got moorum ballast.

Fencing—The line is fenced only between Nagpur and Kamptee and at some of the more important stations as also at some of the station yards and first class level crossings on the Barang-Waltair section.

Curves—On the main line there are no curves sharper than 305 metres radius.

Gradients—The ruling gradient between Howrah and Khargpur is 1 in 200 between Khargpur & Chakradharpur 1 in 125; between Chakradharpur and Dongargarh 1 in 100, between Dongargarh & Nagpur 1 in 120, between Santragachi and Shalimar 1 in 500; on the Tata Badamphar Gurumahisani Branches and Jharsuguda—Sambalpur and Tumsar—Tirodi branches and between Gombaria and Kandra 1 in 100; on the Rajkharswan—Gua and Rourkela—Birmitrapur branches 1 in 60, on the Kanhan—Ramlek branch 1 in 125, between Khargpur and Cuttack 1 in 150 between Cuttack and Waltair 1 in 150, on Talcher coal field branch 1 in 100 compensated with the loads, i.e. towards Nergundi 1 in 100 against the loads i.e. towards Talcher, between Khurda Road and Puri 1 in 150; between Khargpur—Andhra Gomoh (direct route) 1 in 200 in the down direction and 1 in 125 in the up direction; between Bhojudih and Mohuda via Bhaga 1 in 80; between Mohuda—Chandrapura and Anara-Rukni 1 in 150, between Asansol—Adra-Sini 1 in 100, between Chandil—Barkakana 1 in 200, on the Raipur—Vizianagram section 1 in 100, between Bilaspur and Katni 1 in 84 in the up direction and 1 in 100 in the Down direction. Anuppur-Chirimiri 1 in 50 up and down between Champa and Korba 1 in 150, between Noamundi-Banspani 1 in 100 between Bhilai—Dhalli—Rajara 1 in 150. Between Kotshila to Chandrapara 1 in 100, Kotshila to Ranchi 1 in 80, Damodar to Kalipahari 1 in 100, Barhil to Bolainkadam 1 in 100, Bondamunda to Barsua 1 in 100, Bhilai to Ahivara 1 in 100 and Bauridand to Karonji 1 in 50.

Statistics of Working

Table A—South Eastern Railway—All Gauges combined (entire system)

Year	Kilometrage open at the end of each year	Total Capital outlay including suspense to end of each year i.e. outlay on (*i*) lines opened and (*ii*) lines partly or wholly under construction	Gross Earnings	Net Earnings	Percentage of net earnings on total Capital Outlay or Capital-at-charge given in column 3	Payment on account of rebate, etc. to Branch Line worked	Payment to General Revenue	** Gain (+) or loss (—) to the State pertaining to each year	Earnings per kilometre per week Col. 4×7 / Col. 2×365	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	
1955-56 .	5,470·27	1,00,09,83,167	32,39,72,360	3,65,40,350	3·65	..	3,81,19,593	— 15,79,243	1,136	88·7
1956-57 .	5,509·69	1,14,55,91,522	41,89,50,695	11,46,97,823	10·01	..	4,06,34,322	+ 7,40,63,501	216	72·6
1957-58 .	5,503·12	1,46,52,98,120	49,11,85,425	15,28,77,452	10·43	..	4,93,81,881	+ 10,34,95,571	1,712	68·9
1958-59 .	5,026·17	1,77,77,26,036	51,13,73,986	14,72,16,089	8·28	..	6,00,76,925	+ 8,71,39,164	1,743	71·21
1959-60 .	5,624·86	1,94,85,14,357	58,37,56,915	19,75,16,804	10·14	..	6,86,50,705	+ 12,88,66,099	1,985	66·16
1960-61 .	5,858·97	2,10,73,57,406	65,73,95,149	23,26,75,048	11·04	..	7,37,63,441	+ 15,89,11,607	2,152	64·61
1961-62 .	5,756·91	2,35,44,46,301	73,35,33,685	26,06,29,028	11.07	..	9,39,23,023*	+ 16,67,06,005	2,443·68	64·47
1962-63 .	5,881·73	2,77,19,10,448	87,03,62,709	32,43,01,959	11·70	..	10,77,57,275*	+ 21,65,44,684	2,837·92	62·73
1963-64 .	5,877·47	2,23,02,16,304	1,00,67,67,304	37,60,16,691	11·74	..	14,84,02,341*	+ 22,76,14,350	3,285·06	62·65

*The figures of payment to General Revenue represent dividend only upto the year 1960-61. For the years 1961-62 to 1963-64, these figures are, however, inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 83,86,160, Rs. 81,99,080 and Rs. 93,67,641 for the years 1961-62, 1962-63 and 1963-64 respectively.

**The figures of 'gain or loss' do not include the receipts from subsidised companies—Government share of surplus profits, railway miscellaneous receipts, miscellaneous railway expenpiture, expenditure on subsidised Railway and expenditure relating to Open Line Works—Revenue.

Table B—Broad Gauge (1·676 Metres)

Year	Kilometrage open at the end of each year	Total Capital outlay including suspense to end of each year i.e. outlay on (*i*) lines opened and (*ii*) lines partly or wholly under construction	Gross Earnings	Net Earnings	Percentage of net earnings on total Capital outlay or Capital at-charge given in column 3	Payment on account of rebate, etc. to Branch lines worked	Dividend to Genl. Revenue	** Gain (+) or loss (—) to the State pertaining to each year	Earning per kilometre per week Col. 4×7 / Col. 2×365	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	Rs.	
1955-56 .	3,981·90	93,97,98,132	31,36,91,602	4,50,67,635	4·80	..	3,57,90,486	+ 92,77,149	1,511	85·6
1956-57 .	4,021·32	1,08,43,89,802	40,83,18,750	12,45,58,574	11·5	..	3,84,64,449	+ 8,60,94,125	1,947	69·5
1957-58 .	4,014·75	1,40,40,14,402	48,06,95,756	16,59,62,650	11·32	..	4,73,21,718	+ 11,86,40,932	2,296	65·5
1958-59 .	4,137·80	1,71,63,31,844	50,05,88,586	15,99,19,743	9·32	..	5,88,09,302	+10,11,10,441	2,320	68·05
1959-60 .	4,136·49	1,88,70,97,936	57,20,68,859	20,92,09,375	11·09	..	6,72,70,826	+14,19,38,549	2,645	63·43
1960-61 .	4,370·60	2,04,60,89,441	64,50,89,160	24,50,45,720	11·98	..	7,16,16,925	+17,34,28,795	2,831	62·01
1961-62 .	4,373·42	2,29,31,48,488	72,08,15,634	27,32,21,370	11·91	..	9,12,89,324*	+18,19,32,046	3,160	62·09
1962-63 .	4,477·12	2,71,05,97,162	85,62,86,087	34,00,00,352	12·54	..	10,51,67,213*	+23,48,33,139	3,668	60·29
1963-64 .	4,472·11	3,16,89,05,054	99,10,63,030	39,00,35,875	12·31	..	14,53,48,920*	+24,46,86,955	4,250	60·64

NOTE—The figures of capital at charge are provisional pending closing of pre-partition accounts and the finalization of the balances of the ex-States. railways brought forward on 1 April 1950.

*The figures of payment to General Revenues represent dividend only upto the year 1960-61. For the years 1961-62 to 1963-64 these figures are, however, inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961 the figures being Rs. 82,74,221, Rs. 87,97,010 and Rs. 89,55,879 for the years 1961-62, 1962-63 and 1963-64 respectively.

**The figures of 'gain or loss' do not include the receipts from subsidised companies—Government share of surplus profits, railway miscellaneous receipts, miscellaneous railway expenditure, expenditure on subsidised Railways and expenditure relating to Open Line Works—Revenue.

SOUTH EASTERN RAILWAY SYSTEM—contd.

(*ii*) SOUTH EASTERN RAILWAY (NARROW GAUGE—0·762 METRE)

Progress in Opening

Section of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
Satpura*—(0·762 metre)					*This Railway is the combination of those lines formerly known as Gondia—Chanda, Jabalpur, Gondia and Nagpur—Chindwara extensions.
Gondia Chanda Extension—					
Gondia to Nagbhir	10-11-1908	133·29			
Nagbhir to Rajoli	1-12-1910	50·95			
Rajoli to Babupeth	1-4-1913	56·87			
Babupeth to Chanda Fort	20-2-1916	1·72	242·83		
Extensions—					
Nagbhir to Motibagh *via* Itwari . . .	10-11-1908	105·41	105·41		
Lines at Itwari	10-11-1908	1·03			
	15-3-1911	2·49			
Entrance to Nagpur	1-7-1925	0·42			
Length taken from G.I.P. Rly. at Nagpur (Itwari) .	March 1932	0·88	4·82		
Jabalpur—Gondia (Extensions)—					
Jabalpur to Howbagh	15-9-1905	2·22			
Howbagh to Burgi	7-4-1905	25·91			
Burgi to Nainpur	5-7-1904	82·83			
Nainpur to Gondia	13-4-1903	116·94	227·90		
Branches and Extension—					
Mandla Branch—					
Nainpur to Garh Mandal	15-2-1909	42·91	42·91		
Barkuhi Branch—					
Nainpur to Seoni	12-2-1904	76·23			
Seoni to Chowrai	27-7-1904	30·93			
Chowrai to Chhindwara	1-9-1904	33·73			
Chhindwara to Khirsadoh	15-3-1906	25·98			
Khirsadoh to Barkuhi	21-3-1907	8·34			
Khirsadoh to Parasia	23-12-1922	1·27	176·48		
Carried over .	..	..	..	800·35	

SOUTH EASTERN RAILWAY SYSTEM—contd.

(*ii*) SOUTH EASTERN RAILWAY (NARROW GAUGE—0·762 METRE)—*contd.*

Progress in Opening—*concld.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Ex-B. N. Rly. Portion.					
Brought forward .		..	..	800·35	
Katangi Branch—					
Balaghat to Katangi . . .	1-5-1913	46·95			
Ram Rama Branch . . .	1-11-1913	10·22	57·17		
Nagpur—Chhindwara Extension—					
Itwari to Lodhikhera	1-11-1911	63·46			
Lodhikhera to Sansar	10-5-1911	11·26			
Sansar to Chhindwara	20-10-1913	67·20	141·92		
Khapa Branch—					
Saoner to Khapa	1-11-1911	7·56			
Katchidana Branch	20-10-1913	0·32	7·88		
Rupsa—Talband Branch					
Rupsa to Baripada*	20-1-1905	52·16			*The section from Rupsa to Baripada formerly known as the Mayurbhanj State Railway was owned by the Mayurbhanj State. It was acquired by the Mayurbhanj Railway Company and managed in their undertaking from the date the section from Baripada to Talband was opened. The Company was registered in 1915 and this portion of the Railway was under the managing agents, Messrs Boar Miller & Co., Calcutta. It has been taken over by the Government of India from 1 April 1950.
Baripada to Talband	15-7-1920	61·52	113·68		
Raipur—Dhamtari Branch—0·762 metre gauge					
Main Line—					
Raipur to Kurud	10-9-1900	51·13			
Kurud to Dhamtari	17-12-1900	21·65			
Branch—					
Abhanpur to Rajim	15-10-1900	16·14**			**The reduction in the kilometrage from 16·43 to 16·14 is due to the adjustment made after reverification during 1963-64.
Total Raipur—Dhamtari Branch .		..	88·92		
Purulia—Ranchi Branch—					
Purulia to Kotshila	15-11-1907	33·21			
Ranchi to Lohardaga	6-10-1913	71·62‡	104·83		‡The increase in the kilometrage from 68·59 to 71·62 is due to the adjustment made after reverification during 19 3-:4.
Naupada—Gunupur Branch†					†On 20th May 1901 the Indian Railway Act 1890 (IX of 1890) except section 135, was applied to the line. The working of this railway was taken by the B.N. Rly. Co. from 1st January 1902 and was known as Parlakimedi Light Railway which with effect from 1st February 1950 has become an integral part of the B.N. Rly. and taken over by the Government of India.
Naupada to Parlakimedi	1-4-1900	39·62			
Parlakimedi to Varanasi	17-11-1929	25·35			
Varanasi to Gunupur	16-11-1931	25·64	90·61		
Total Open kilometrage (South Eastern Railway (Narrow gauge—0·762 metre)		..	..	1,405·36	

(ii) SOUTH EASTERN RAILWAY (NARROW GAUGE—0·762 METRE)—*concld.*

DETAILS OF CONSTRUCTION

Satpura Railway Section—

Permanent Way—The permanent way consists of 19·84, 20·44, 24·80, 37·13, 20·46 and 42·37 kilograms/metre (40, 41, 50, 75, 41½ and 85 lbs./yard) rails laid on sal sleepers.

Ballast—The line is ballasted mostly with stone and at places with moorum.

Fencing—Only important station yards are fenced.

Curves—The sharpest curve is of 109 metres radius.

Gradients—The ruling gradient is 1 in 80, except between Gondia and Chanda where it is 1 in 100 and between Khirsadoh and Barkuhi where it is 1 in 60.

Rupsa-Talband Section—

Permanent Way—The line is laid with 14·88, 19·84, and 24·80, kilograms/metre (30, 40, and 50 lbs./yard) flat footed steel rails on sal sleepers.

Ballast—The Rupsa-Baripada Section is ballasted with moorum and the Rupsa-Talband Section with stone and moorum both.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 277 metres radius.

Gradients—The ruling gradient is 1 in 100 between Rupsa and Baripada and 1 in 83·33 between Baripada and Talband.

Raipur-Dhamtari Section—

Permanent Way—The line is laid with 15·38, 24·80, and 37·13 kilograms/metre (31, 50 and 75 lbs./yard) flat footed steel rails on sal sleepers.

Ballast—The line is ballasted mostly with moorum and at places with stone.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 113 metres radius at Raipur station.

Gradients—The ruling gradient on the Raipur-Dhamtari Section is 1 in 100 and Abbanpur-Rajim Branch 1 in 200.

Purulia-Ranchi Section—

Permanent Way—The line is laid with 19·84, 20·44, 24·80, 37·13 and 42·37 kilograms/metre (40, 41, 50, 75 and 85 lbs./yard) flat-footed steel rails on transverse wooden sleepers and few trial converted steel sleepers.

Ballast—The line is ballasted with stone and at places with moorum.

Fencing—Only the important level crossings have posts and chains padlocked.

Curves—The sharpest curve is of 291 metres radius.

Gradients—The ruling gradient is 1 in 80.

Naupada-Gunupur Section—

Permanent Way—The line is laid with 14·88, 19·84, 24·80 kilograms/metre (30, 40 and 50 lbs./yard) flat-footed rails on sal sleepers.

Ballast—The line is ballasted mostly with moorum and at places with stone.

Fencing—Short lengths of fencing have been provided in a few places where the railway runs in cutting alongside the road.

Curves—There are no curves of less than 349 metres radius.

Gradients—The ruling gradient is 1 in 100.

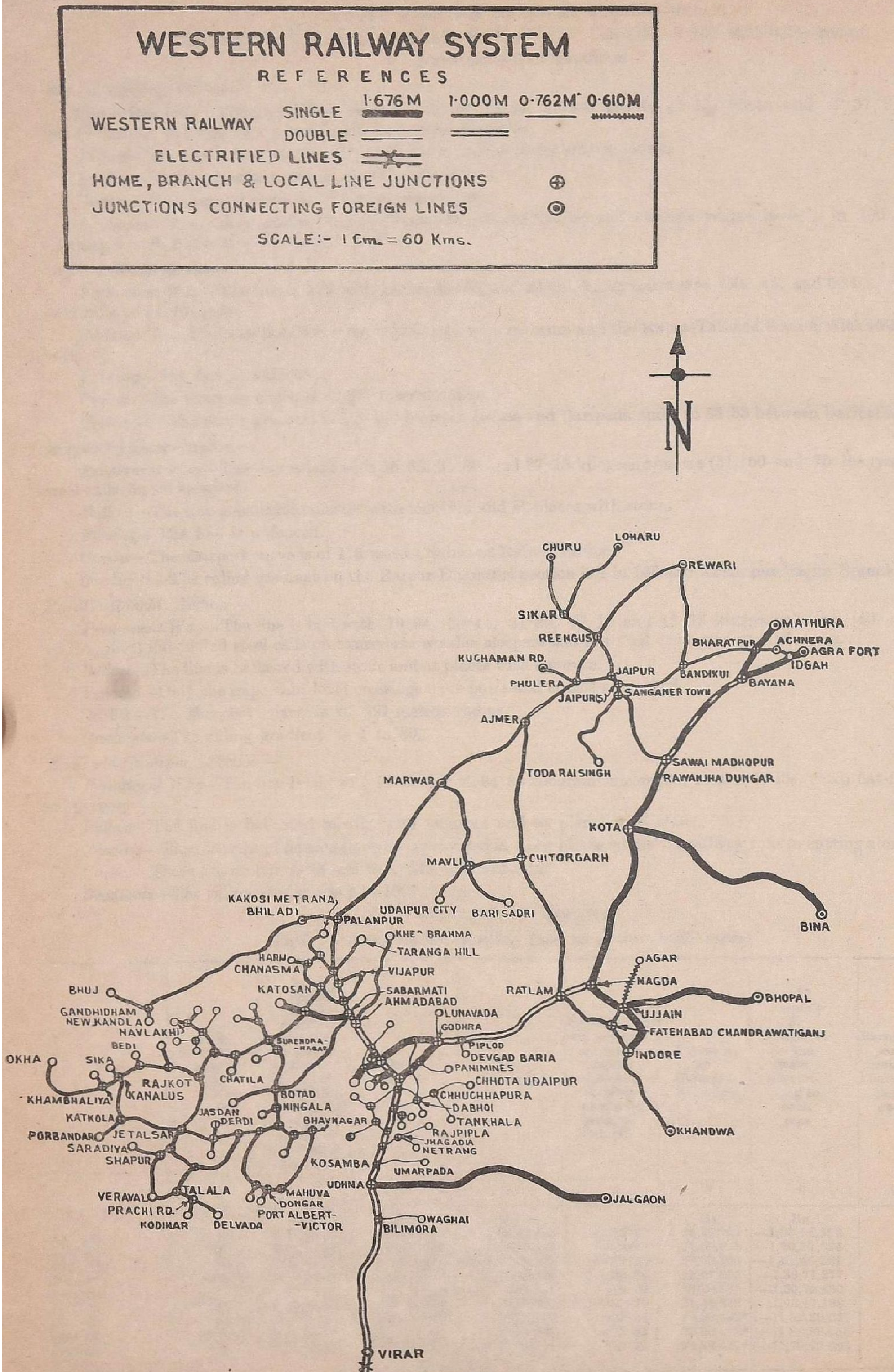
STATISTICS OF WORKING

Table C—South Eastern Railway (narrow gauge—0·762 metre)

Yaer	Route kilometrage open at the end of each year	Total capital outlay, including suspense to end of each year i.e. outlay on (i) lines open and (ii) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay or capital-at-charge given in Col. (3)	Payment to General Revenues	** Gain+ or loss(—) to the State pertaining to each year	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1955-56 . .	1488·37	6,11,85,035	1,02,80,758	(—) 85,27,285	(—)13·93	23,29,107	—1,08,56,392	132	182·9
1956-57 . .	1488·37	6,12,01,720	1,06,31,945	(—) 98,60,751	(—)16·1	21,69,873	—1,20,30,624	137	192·7
1957-58 . .	1488·37	6,12,83,718	1,04,89,669	(—)1,30,85,198	(—)21·35	20,60,163	—1,51,45,361	135	224·7
1958-59 . .	1488·37	6,13,94,192	1,07,85,400	(—)1,27,03,654	(—)20·69	12,67,623	—1,39,71,277	139	217·78
1959-60 . .	1,488·37	6,14,16,421	1,16,88,056	(—)1,16,92,571	(—)19·04	13,79,879	—)1,30,72,450	150	200·04
1960-61 . .	1,488·37	6,12,67,965	1,23,05,989	(—)1,23,70,672	(—)20·19	21,46,516	—)1,45,17,188	159	200·57
1961-62 . .	1,383·49	6,12,97,814	1,29,18,051	(—)1,25,92,342	(—)20·54	26,33,699*	(—)1,52,26,041	179	197·48
1962-63 . .	1,404·61	6,13,13,286	1,40,76,622	(—)1,56,98,393	(—)25·54	25,90,062*	(—)1,82,88,455	192	211·52
1963-64 . .	1,405·36	6,13,11,250	1,57,04,274	(—)1,40,19,184	(—)22·87	30,53,421*	(—)1,70,72,605	214	189·27

*The figures of payment to General Revenues represent dividend only upto the year 1960-61. For the years 1961-62 to 1963-64, these figures are, however, inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961, the figures being Rs. 4,08,939, Rs. 4,02,070 and Rs. 41,11,762 for the years 1961-62, 1962-63 and 1963-64 respectively.

**The figures of 'gain or less' do not include the receipts from subsidised companies—Government share of surplus profits, railway miscellnous receipts, micellaneous railway expenditure, expenditure on subsidised Railways and expenditure relating to Open Line Works—Revenue.


WESTERN RAILWAY SYSTEM
REFERENCES
1·676 M
1·000 M
0·762 M
0·610 M
WESTERN RAILWAY
SINGLE
DOUBLE
ELECTRIFIED LINES
HOME, BRANCH & LOCAL LINE JUNCTIONS
JUNCTIONS CONNECTING FOREIGN LINES
SCALE:- 1 Cm. = 60 Kms.
N
CHURU
LOHARU
REWARI
SIKAR
REENGUS
MATHURA
BHARATPUR
ACHNERA
AGRA FORT
IDGAH
KUCHAMAN RD.
JAIPUR
BANDIKUI
PHULERA
JAIPUR(S)
SANGANER TOWN
BAYANA
AJMER
SAWAI MADHOPUR
TODA RAISINGH
RAWANJHA DUNGAR
MARWAR
KOTA
MAVLI
CHITORGARH
KAKOSI METRANA
BHILADI
PALANPUR
UDAIPUR CITY
BARI SADRI
BINA
KHED BRAHMA
TARANGA HILL
HARIJ
CHANASMA
VIJAPUR
AGAR
NAGDA
BHUJ
KATOSAN
SABARMATI
RATLAM
BHOPAL
GANDHIDHAM
NEW KANDLA
AHMADABAD
LUNAVADA
UJJAIN
NAVLAKHI
GODHRA
FATEHABAD CHANDRAWATIGANJ
BEDI
SURENDRA-NAGAR
PIPLOD
OKHA
SIKA
DEVGAD BARIA
INDORE
RAJKOT
PANIMINES
CHATILA
KANALUS
CHHOTA UDAIPUR
KHAMBHALIYA
BOTAD
CHHUCHHAPURA
NINGALA
DABHOI
KATKOLA
JASDAN
DERDI
BHAVNAGAR
TANKHALA
PORBANDAR
JETALSAR
RAJPIPLA
KHANDWA
SARADIYA
JHAGADIA
NETRANG
SHAPUR
KOSAMBA
UMARPADA
UDHNA
VERAVAL
TALALA
MAHUVA
JALGAON
DONGAR
PRACHI RD.
PORT ALBERT-VICTOR
KODINAR
DELVADA
WAGHAI
BILIMORA
VIRAR
BOMBAY CHURHGATE

CHAPTER IX

WESTERN RAILWAY SYSTEM

Headquarters—Bombay, Churchgate.

Present System—The Western Railway was formed on 5th November 1951, by regrouping the following Railways into a single unified system :—

(a) The Bombay, Baroda and Central India Railway System (broad gauge—1·676 metres, metre gauge—(1·000 metre and—narrow gauge—0·762 metre).

(b) The Saurashtra Railway (metre gauge—1·000 metre and narrow gauge—0·762 metre).

(c) The Rajasthan State Railway (metre gauge—1·000 metre).

(d) The Jaipur State Railway (metre gauge—1·000 metre).

(e) The Cutch State Railway (narrow gauge—0·762 metre).

The Delhi-Rewari-Fazilka and the Kanpur-Achnera Sections of the Western Railway were later on merged with the Northern and the North Eastern Railways respectively on their formation, on 14th May 1952, when the Marwar-Phulad Section of the Jodhpur Railway was, however, merged with the Western Railway.

Administrative Set Up—The Western Railway Administration is headed by the General Manager who is assisted by the Senior Deputy General Manager and other Heads of Departments, *viz.* Chief Commercial Superintendent, Chief Electrical Engineer, Chief Engineer, Chief Engineer (Survey and Construction), Chief Mechanical Engineer, Chief Medical Officer, Chief Operating Superintendent, Chief Personnel Officer, Chief Security Officer, Chief Signalling and Tele-communication Engineer, Controller of Stores and Financial Adviser and Chief Accounts Officer. There are eight divisional officers at Bombay, Baroda Ratlam, Kota, Ajmer, Jaipur, Rajkot and Bhavnagar, each under a Divisional Superintendent who is, in effect, the Area General Manager.

HISTORY

(a) *Bombay, Baroda & Central India Railway*—By far the most important system among these Railways was the Bombay, Baroda and Central India Railway representing one of the six trunk line guaranteed Railways formed at the commencement of railway development in the country. The Bombay, Baroda and Central India Railway Company was organized in 1852* and East India Company authorised the company in August 1853 to survey lines from Bombay *via* Surat, Baroda, and Neemuch to Agra; and from Surat by the Valley of the Tapti, into Khandesh, with an extension to the Valley of the Narbada. The results of these surveys, reported by Col. Kennedy in 1854, were considered favourably as regards the Coast line from Bombay to Baroda. On 21st November 1855, arrangements were made with the Company to undertake construction and working of the line from Surat to Baroda. Government sanctioned the commencement of the works which were to be carried on under the direct management of the Railway engineers without the intervention of a contractor. They broke ground on the first section of the Surat-Broach line on 1st May 1856.

The original contract with the Bombay, Baroda and Central India Railway Company was for a period of 99 years from 21st November 1855, after which the line was to become the property of the Government on payment of the actual capital outlay sterling. The contract was terminable by purchase after 25 or 50 years. Another contract dated 2nd February 1859 authorised the Company to construct and work a line from Bombay to Surat. On 17 November 1871, a further contract was signed with the Company to construct and work a line from Viramgam to Wadhwan. The Bombay, Baroda & Central India Railway was left undisturbed for the first fifty years of the contract. It was in 1905, when the Government of India decided to exercise the option to purchase the property vested in the old Bombay, Baroda and Central India Guaranteed Railway Company, and the same was purchased by the State on 31st December 1905, from which date all contracts then subsisting between the Secretary of State and that Company were determined as from 1st January 1906.

When in 1905, the Government determined all contracts between the Company and the Secretary of State, the Railway was worked under a provisional contract till a new contract was executed on 8th April, 1907, according to which reconstituted Bombay, Baroda & Central India Railway Co., agreed to work the system. The Rajputana-Malwa line was then made an integral part of the Bombay, Baroda & Central India Railway system instead of a worked line as heretofore

The currency of the new contract was made more flexible and itcould be determined by either party on 31st December 1930 or on 31st December of any succeeding fifth year by giving to the other party in England twelve months' notice in writing. This aspect of the provision in the agreement was later cancelled by a supplemental agreement in 1913 according to which the agreement could be determined and the Railway taken over by the Secretary of State on 31st December, 1941 or on 31st December in any succeeding fifth year reckoning from that date, by giving to the Company in England twelve calendar months' notice in writing. On 31st December 1941, all contracts with the reconstituted Bombay, Baroda & Central India Railway Company were determined and the line was taken over with effect from 1st January 1942.

During the period 1920 to 1941, certain further changes occurred in the kilometrage worked by the system. Some of the Indian States, the Railways of which were worked by the Bombay, Baroda & Central India Railway, decided to take them over for management by their respective Governments. The most important among these was the Baroda State. The Baroda State Railways which were worked by the Bombay, Baroda & Central India Railway Company till 30th September 1921 were taken over by the Durbar. The Bodeli-Chhota Udaipur, a later construction, also passed over from the Bombay, Baroda & Central India Railway to the Durbar on the same date. The transfer of the Gaekwar's Mehsana Railway came next on 31st March 1933.

The absorption of the several smaller Railways into the Bombay, Baroda & Central India Railway may be briefly referred to here.

The Tapti Valley Railway, which owed its development to the Company bearing the same name and was worked by the Bombay, Baroda & Central India from the very commencement, was purchased by the Government of India on 1st April 1942.

Three narrow gauge lines, viz., the Champaner Shivrajpur-Pani Light Railway, the Godhra-Lunavada Railway and the Nadiad-Kapadvanj Railway, which were privately owned but worked by the Bombay, Baroda & Central India Railway were purchased by the State on 1st April 1944, and merged in the Bombay, Baroda & Central India Railway.

The Ahmedabad-Parantij Railway owned by the Ahmedabad Parantij Railway Co. was managed by the Government of India, through the agency of the Bombay, Baroda & Central India Railway Company with effect from 4 June 1896. It was purchased by the Government on 1st January 1947, and added to the Bombay, Baroda & Central India Railway system

*General Report on the Administration of the Several Presidencies and Provinces of British India during the year 1855-6, Part X. Calcutta, 7, p. 42. Report on the Administration of the Bombay Presidency for the year 1855-6, dated 25 September 1856, para 155 page 25.

WESTERN RAILWAY SYSTEM—contd.

With effect from 1st August 1949, the following lines worked by the Bombay, Baroda & Central India Railway, but owned by the different Durbar Governments, came to vest in the Government of India as a result of the merger of former Indian States with the Provinces and thus became integral parts of the Bombay, Baroda & Central India Railway system—

(1) Gaekwar's Baroda State Railway (metre gauge—1·000 metre and narrow gauge—0·762 metre) owned by Baroda Durbar.

(2) Petlad Cambay Railway (Anand-Tarapur Section) (broad gauge—1·676 metres) owned by Baroda Durbar.

(3) Petlad Cambay Railway (Tarapur-Cambay Section) (broad gauge—1·676 metres) owned by Cambay Durbar.

(4) Palanpur State Railway (metre gauge—1·000 metre) owned by Palanpur Durbars.

(5) Piplod Devgad Baria Railway (narrow gauge —0·762 metre) owned by Baria State.

(6) Rajpipla State Railway (narrow gauge—0·762 metre) owned by Rajpipla State.

As a result of the Federal Financial Integration with effect from 1st April 1950, the Nagda-Ujjain Railway, which was the property of the Gwalior Durbar and worked by the Bombay, Baroda & Central India Railway was also taken over by the Government of India and merged with the Bombay, Baroda & Central India Railway system.

The Cutch State Railway which came to vest in the Government of India with the constitution of Cutch State into a Centrally Administered Area in 1949-50, was brought under the administrative control of the Bombay, Baroda & Central India Railway in June 1950.

NOTE 1—The Nagda-Mathura Railway which was constructed partly from Government funds and partly from funds received from the Jaipur Durbar, was being worked and managed by the B.B. & C.I. Railway as an integral part of the B.B. & C.I. Railway system. The terms between the Government of India and the Jaipur Durbar for the Durbar's contribution towards the cost of the Nagda-Mathura Railway and for maintenance, working and the distribution of the net earnings of the Railway were as under. As a result of the Federal Financial Integration the interest of the Durbar re-vested to the Government of India.

(*i*) The Jaipur Durbar provided Rs. 85 lakhs, the cost of the Jaipur section of the Nagda-Mathura Railway. The cost of the remaining length as well as future capital required for the entire line to be provided by the Government of India.

(*ii*) The whole capital outlay of the Nagda-Mathura Railway to be that on works (excluding rolling-Stock) between Nagda and Mathura excluding junction arrangements and the cost of the Bayana-Agra Chord Railway.

(*iii*) The investment made by the Durbar to be regarded as permanent. The Durbar have no right to part with its interest in the line except to the Government of India.

(*iv*) The Government of India are under no obligation to purchase the Durbar's interests in the line. If the Durbar wishes to sell its interests and the Government of India agree to buy, the price shall be 25 times the average net annual profits received by the Durbar during the three preceding years.

(*v*) The working expenses to be the amount calculated on the same percentage of working expenses as obtains on the B.B. & C.I. Railway, Broad Gauge System or 50 per cent of the gross earnings whichever is less plus 5 per cent of the gross earnings for the supply of rolling-stock. The gross earnings to be the actual of the N.M. Section except for interchanged traffic which will be apportioned on the kilometrage basis and included in the actuals. The net earnings to be divided between the Government of India and the Jaipur Durbar in the proportions of the capital provided by them in any half year *vide* Letter No. 373/44-1945, dated 16-4-1945.

NOTE 2—(*i*) Under the agreement dated 28th April 1870, H. H. the Maharaja Tukojirao Holkar advanced a loan of one crore of Rupees (since reduced to seventy lakhs) for the construction of the line from Khandwa to Indore. The main conditions were:—

(1) The line to be called the Holkar-State Railway.

(2) The whole of the arrangements as to the construction and equipment as well as management after the line is opened, to be exclusively in the hands of the Government of India.

(3) The loan to be for 101 years.

(4) Government of India to pay half yearly at Indore to H. H. the Maharaja of Holkar, his heirs or successors, guaranteed interest @ 4½% per annum, free of income tax. In addition to this the Government of India pay 7/20 of the net profits (in excess of 4½% on the capital) from the earnings of the line for which separate Capital and Revenue accounts will be maintained.

(*ii*) With the merger of the former Indore State in the Madhya Bharat Union the payment of interest for the year 1949-50 was made to the Government of Madhya Bharat with effect from 1st April, 1950, the loan has been treated as extinguished as a result of the Federal Financial Integration and the amount is treated as share capital of the railway undertaking.

NOTE 3—The Baroda Government were allowed a financial interest in the T.V. Railway with effect from 1-4-1942 the date on which the line was purchased by the Government of India from the Tapti Valley Railway Company. With the merger of the former Baroda state with effect from 1-8-1949 the interest of the State re-vested to the Government of India.

(*b*) *Jaipur State Railway*—Although the Jaipur State permitted the Bombay, Baroda & Central India Railway Company to construct railways in the State as far back as 1872, there was no progress till the State itself took the initiative. The Jaipur State Railway dates back to 1905, when the Sanganer-Nawai section was built by the former Jaipur Government at their own cost. Later additions to the Railway were also made by the Jaipur Government. From the very commencement, the Railway was worked under an agreement by the Bombay, Baroda & Central India on behalf of the State. The agreement was terminated on 31st March 1936, after which the Jaipur Government assumed direct management of the Railway. With the constitution of the United State of Rajasthan and the Federal Financial Integration, the Railway came to vest successively in the new State from 1st May 1948 and in the Government of India with effect from 1st April 1950.

(*c*) *Rajasthan Railway*—The line was constructed at the expense of the Mewar Durbar, and was maintained and worked by the Bombay, Baroda and Central India Railway Company up to 31st December 1897. With effect from 1st January 1898 the maintenance and working of the line were taken over by the Durbar. The name 'Udaipur Chitorgarh Railway' was changed to 'Mewar State Railway' on and from 1st August 1940. Consequent on the formation of the United State of Rajasthan with effect from 1st May 1948, the controlling powers were transferred to the newly formed Government from that date by the Durbar and since then the line was maintained and owned by the United State of Rajasthan. The name Mewar State Railway was further changed to Rajasthan Railway on and from 15th December 1948. As a result of the Federal Financial Integration with effect from 1st April 1950, the line came to vest in the Government of India.

(*d*) *Saurashtra Railway*—Kathiawar had its first railway connection brought to it, when the Bombay, Baroda & Central India Railway extended its broad gauge section up to Wadhwan (now Surendranagar) called the gateway to Kathiawar. The history of the construction of railways in Kathiawar dates back to 1879 when the State of Bhavnagar built the first railway line in old Kathiawar from Wadhwan (now Surendranagar) to Bhavnagar. The Gondal State also in the same year made a beginning on a line from Dhassa to Dhoraji, a distance of 119·09 kilometres. The Morvi Durbar came next and provided railway connections originally on narrow gauge (0·762 metre) within its territory from 1886 to 1890, and which were later on converted to metre gauge. The Junagadh and Porbandar States soon followed in 1888 and 1889 respectively, while the Jam Sahib of Nawanagar constructed the line in his State from Rajkot to Jamnagar in 1897.

The Kathiawar States had a two-fold object in rail construction. Firstly, rail communications would develop their respective territories. Secondly, the bigger among the Kathiawar States had their own ports which they desired to develop, as besides their inherent potentialities from their geographical position of serving a vast hinterland beyond Kathiawar, theirs would also become a fruitful source of customs revenue.

WESTERN RAILWAY SYSTEM—contd.

With such a diversity of lines in a limited area, owned and worked by different Indian States agencies, the question of economical and efficient management naturally assumed special importance. A solution was found in combined management by the Bhavnagar, Gondal, Junagadh and Porbandar Durbars known as B.G.J.P. The combined system was also for a time known as the B.G.J.P. Railway, consisting of the Bhavnagar, Gondal, Junagadh and Porbandar railways. In 1896 a Board of Control, consisting of representatives of all these States, was set up at Bhavnagar Para, for joint operation of the railways. This arrangement, however, remained in force only for fifteen years, till 1911, after which the lines resumed their independent existence with headquarters at the respective capitals of the four States. Further details for each of the constituent units will be found just before the table showing statistics of working for each unit in the Supplement to the History of Indian Railways.

In 1948, as a result of the integration of all the States in Kathiawar, the United State of Saurashtra was formed. This facilitated the consolidation of all the railways of the region into a single unit, and accordingly the following lines owned and worked by the States of Kathiawar were taken over by the Saurashtra Government with effect from 1 April 1948 and named as Saurashtra Railway.

The Saurashtra Railway System was made up of the following lines:—

(a) Bhavnagar State Railway—metre gauge (1·000 metre)
(b) Gondal Railway—metre gauge (1·000 metre)
(c) Porbandar State Railway—metre gauge (1·000 metre)
(d) Jamnagar Railway—metre gauge (1·000 metre)
(e) Jamnagar & Dwarka Railway—metre gauge (1·000 metre)
(f) Morvi Railway—metre gauge (1·000 metre)
(g) Dhrangadhra State Railway—metre gauge (1·000 metre)
(h) Okhamandal Railway— metre gauge (1·000 metre)
(i) Jetalsar Rajkot Railway—metre gauge (1·000 metre)
(j) Junagadh State Railway*—narrow gauge (1·000 metre)
(k) Khijadia Dhari†—metre gauge (1·000 metre)
(l) Prachi Road Kodinar†—metre gauge (1·000 metre)
(m) Bhavnagar Talaja Mahuva—narrow gauge (0·762 metre)
(n) Joravarnagar Sayla—metre gauge (0·762 metre)
(o) Morvi Tramways—narrow gauge (0·762 metre)

*This was taken over from 1st May 1948.

†Taken over from Gaekwar's Baroda State Railway from 1st May 1948.

As a result of the Federal Financial Integration with effect from 1st April 1950, this railway system came to vest in the Government of India.

The detailed history along with the progress of opening, statistics of working, etc., of the constituent units of the Western Railway, upto the time each unit retained its separate entity, is given in the Supplement to the History of Indian Railways.

LINES COMPRISED IN THE SYSTEM—The Western Railway system is made up of—

	Open Line Route kilometres	New Lines Under construction Kilometres
(i) Western Railway—broad gauge (1·676 metres)	2,634·53	193·35
(ii) Western Railway—metre gauge (1·000 metre)	5,898·15	210·00
(iii) Western Railway—narrow gauge (0·762 metre)	1,155·82	..
(iv) Western Railway—narrow gauge (0·610 metre)	66·92	..
Total	9,755·42	403·35

TOTAL ROUTE KILOMETRAGE ELECTRIFIED—60·17 kilometres

Sections electrified—Church Gate to Grant Road (local lines), Grant Road to Andheri (through lines), Grant Road to Bandra (local lines), Borivli to Virar (main lines), Bandra to Borivli (local lines).

Date of First Opening for Public Service of Electrified Sections—

Church Gate to Borivli	5th January 1928
Borivli to Virar	1st September 1936
Bandra to Andheri	15th April 1953

RUNNING POWERS

	Kilometres
Home Lines over other Lines—	
Over Central Railway—	
(a) Dadar Junction to Carnac Bridge for goods trains only	6·82
(b) Mahim to Wadala Rd. for passenger and goods trains	1·98
(c) Mathura Jn. to Tughlakabad for passenger trains only	124·02
(d) Jalagaon to Bhusaval for passenger and goods trains	25·35
(e) Fatehpur Jn. Cabin to Belanganj for goods train only	4·88
(f) Kotah-Bina for passenger and goods trains	2·48
(g) Ujjain-Bhopal for passenger and goods trains	2·67
(h) Bhopal Chord line for goods trains only	1·75
(i) Ajmer-Khandwa (M.G.)	0·62
	170·57
Over Northern Railway—	
(a) Tughlakabad to Delhi for passenger trains only	21·98
(b) Rewari to Delhi for passenger trains only	82·48
(c) Jamuna-Bridge to Tundla for goods trains only	20·92
	125·38
Over Bombay Port Trust Railway—	
Wadala to Ballard Pier for passenger and Mail trains	12·87
Other Lines over Home Lines—	
Northern Rly., Agra East Bank to Idgah Agra (for passenger trains only)	4·88
Agra East Bank to Rupbas (for ballast trains only)	52·38
Kuchaman Rd. to Phulera for passenger and goods trains	31·43
Rewari to Narnaul for passenger trains	49·89
Central Rly., Mahim to Bandra (for local trains)	2·14
North Eastern Rly., Achnera-Agra Fort (for passenger trains only)	26·20
Total	166·92

WESTERN RAILWAY SYSTEM—contd.

(*i*) WESTERN RAILWAY BROAD GAUGE—(1·676 METRES)

Progress in Opening

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
BOMBAY DIVISION					
Main Line—					
Church Gate to Marine Lines	18-1-1870	1·00			
Marine Lines to Charni Road	19-6-1869	1·17			
Charni Road to Grant Road	3-9-1868	1·42			
Grant Road to Bulsar	28-11-1864	194·46			
Bulsar to Navsari	2-9-1861	39·18			
Navsari to Sachin	20-5-1861	14·88			
Sachin to Surat	18-3-1861	14·53			
Surat to Utrain	19-11-1860	1·65*	268·29		*2·03 kilometres in Baroda Division.
Tapti Valley Branch—					
Udhna to Vyara	1-12-1898	57·08			
Vyara to Chinchpada	5-6-1899	58·71			
Chinchpada to Nandurbar	20-7-1899	40·85			
Nandurbar to Dondaiche	10-11-1899	34·38			
Dondaiche to Nardana	25-11-1899	32·67			
Nardana to Amalner	15-3-1900	28·16			
Amalner to Erandol	4-4-1900	24·95			
Erandol to Jalgaon	20-2-1900	27·85	304·65		
Mahim Wadala Section—					
Mahim Yard	11-8-1914	0·32	0·32		
Total Bombay Division broad gauge (1·676 metres)		..	573·26		
BARODA DIVISION					
Main Line—					
Surat to Utrain	19-11-1860	2·03			
Utrain to Anklesvar	10-2-1860	46·03			
Anklesvar to Nerbudda	5-12-1860	9·19			
Nerbudda to Broach	22-6-1860				
Broach to Baroda	9-1-1861	74·14			
Baroda to Vasad	22-4-1862	16·17			
Vasad to Mehmadabad and Kaira Road	3-9-1862	51·47			
Mehmadabad and Kaira Road to Ahmedabad	21-1-1863	28·49			
Ahmedabad to Sabarmati	1-1-1870	5·90			
Sabarmati to Sanand	24-5-1871	23·71			
Sanand to Viramgam	30-11-1871	36·83	293·96		
Branches and Sections—					
Godhra Branch—					
Anand to Dakor	8-4-1874	29·31			
Dakor to Rukhyal	6-1-1875	15·53			
Rukhyal to Angadi	6-12-1876				
Angadi to Sevalia	29-1-1877	6·29			
Sevalia to Godhra	26-2-1882	27·08	78·21		
Patri Branch—					
Kharaghoda to Viramgam	12-5-1873	36·05	36·05		
Godhra-Baroda Chord—					
Baroda to Godhra	23-12-1903	73·72	73·72		
Godhra-Ratlam Section—					
Godhra to Limkhera	16-1-1893	1·66	1·66†		†38·74 kilometres in Ratlam Division.
Carried over			..	1,056·86	

WESTERN RAILWAY SYSTEM—*contd.*

(*i*) WESTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
Brought forward .				1,056·86	
Boriavi-Vadtal-Swaminarayan Branch—					
Boriavi to Vadtal	18-4-1929	6·05	6·05		
Petlad-Cambay Branch—					
Anand to Petlad	5-5-1890	21·84			
Petlad to Tarapur	20-6-1901	13·77			
Tarapur to Cambay	20-6-1901	16·82	52·43		
Vasad-Kathana Section—					
Vasad to Kathana	10-6-1953	43·03	43·03		
Total Baroda Division (Broad Gauge—1·676 metres) .			585·11		
RATLAM DIVISION					
Main Line—					
Godra-Ratlam—Nagda Section—					
Godhra to Limkhera	16-1-1893	38·74			
Limkhera to Dohad	7-3-1894	32·94			
Dohad to Ratlam	22-10-1894	113·37			
Ratlam to Nagda	11-5-1896	41·36			
Godhra to Morak	15-7-1907	1·11**	227·52		** 161·43 kilometres in Kotah Division.
Branch Line—					
Nagda to Ujjain	15-7-1896	55·70			
Ujjain to Bhopal (*a*)	11-11-1895	180·04	235·74		
Indore-Dewas Ujjain (*a*)	15-9-1958	79·23	79·23		
Total Ratlam Division (Broad Gauge—1·676 metres) .			542·49		(*a*) Transferred from Central Railway from 1-3-1957.
KOTAH DIVISION					
Main Line—					
Godhra to Morak	15-7-1907	161·61			
Morak to Kotah City	26-2-1908	57·62			
Kotah City to Kotah Jn.	1-5-1909	4·64			
Kotah Jn. to Sawai Madhopur	1-5-1909	107·78			
Sawai Madhopur to Gangapur City . . .	1-6-1909	63·60			
Gangapur City to Hindaun City	1-10-1909	44·30			
Hindaun City to Mathura Jn.	15-6-1909	107·05	546·60		
Branch Line—					
Bayana to Agra Fort	1-12-1913	84·42			
Agra Fort to Agra East Bank	1-1-1876	2·27			
Idgah Agra Yards towards Agra Cantonment . .	..	0·60	87·29		
Bina-Kotah Section—(*a*)					
Bina to Guna	23-9-1895	115·25			
Guna to Baran	15-5-1899	118·94			
Baran to Antah	20-2-1907	21·85			
Antah to Kotah	1-5-1909	43·74	299·78		
Total Kotah Division (Broad Gauge—1·676 metres) .			933·67		
TOTAL OPEN KILOMETRAGE (Broad Gauge—1·676 metres)			..	2,634·53	
BOMBAY DIVISION					
Quadruple Line—					
Grant Road to Bellasis Road	17-10-1926	0·80			
Bellasis Road to Mahalaxmi	31-10-1926	1·40			
Mahalaxmi to Elphinstone Road	26-9-1926	3·03			
Elphinstone Road to Mahim	1-3-1922	3·96			
Mahim to Bandra	1-5-1917	1·74			
Bandra to Santa Cruz	2-3-1926	2·96			
Santa Cruz to Andheri	29-1-1926	4·26			
Andheri to Goregaon	5-3-1926	5·02			
Goregaon to Borivli	19-2-1926	7·52			
North of Borivli Station	13-3-1927	0·23	30·92		
Total Quadruple line .		..	..	30·92	
Triple Line—					
Churchgate Yard		0·21			
Grant Road Yard		0·35	0·56		
Total Triple line .	..	..	..	0·56	
Double Line—					
Churchgate to Marine Lines	18-1-1870	0·79			
Marine Lines to Charni Road	19-6-1869	1·17			
Charni Road to Grant Road	13-9-1868	1·21			
Borivli to Bhayandar	27-4-1885	8·63			
Bhayandar to Virar	1-10-1885	16·56			
Virar to Palghar	1-12-1897	30·74			
Palghar to Dahanu Road	17-1-1898	33·07			
Dahanu Road to Gholvad	20-4-1900	11·08			
Gholvad to Vapi (Daman Road)	18-10-1900	37·30			
Vapi (Daman Road) to Bulsar	29-1-1902	26·02			
Bulsar to Sachin	21-4-1902	54·06			
Sachin to Udhna	4-7-1887	10·49			
Udhna to Surat	5-6-1868	4·04			*2·03 kilometres in Baroda Division.
Surat to Utran	9-10-1867	1·65*			
Mahim Yard	11-8-1914	0·32	237·13		
Total Bombay Division, Broad Gauge, double line .		..	..	237·13	

WESTERN RAILWAY SYSTEM—contd.

(i) WESTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

PROGRESS IN OPENING—*concld.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
BARODA DIVISION					
Surat Baroda Section—					
Surat to Utran	9-10-1867	2·03			
Utran to Sayan	25-5-1898	9·61			
Sayan to Kim	1-10-1898	10·19			
Kim to Ankleshwar	11-12-1899	26·23			
Ankleshwar to Silver Jubilee Bridge	7-12-1913	9·19			
Silver Jubilee Bridge to Broach	20-12-1935				
Broach to Miyagam	15-10-1899	40·55			
Miyagam to Itola	15-9-1897	11·57			
Itola to Baroda 'C' Cabin	7-6-1895	22·02			
Baroda 'C' Cabin to 'D' Cabin	10-4-1916		131·39		
Anand-Ahmedabad Section—					
Anand to Boriavi	1-3-1950	7·54			
Boriavi to Nadiad	6-4-1950	10·87			
Nadiad to Gothaj	21-12-1949	9·12			
Gothaj to Mehmadabad	29-12-1949	8·39			
Mohmadabad to Kanij	18-4-1951	7·09			
Kanij to Barejadi	10-11-1949	4·38			
Barejadi to Ahmedabad	2-6-1887	17·02	64·41		
Baroda-Anand Section—					
Baroda 'D' Cabin to Bajuwa	1-11-1958	3·33			
Bajuwa to Ramoli	1-12-1958	5·36			
Vasad to Navli	30-1-1959	8·81			
Navli to Anand	28-2-1959	6·74			
Ramoli to Mahi Bridge (Cabin)	30-4-1959	5·46			
Godhra to Limkhera	20-10-1957	1·66	31·36		
Total Baroda Division B.G. Double line	..	..	..	227·16	
RATLAM DIVISION					
Godhra Ratlam Section—					
Chanchelao to Kansudi	24-2-1958	6·97			
Kansudi to Godhra	27-3-1958	2·98			
Morwani to Ratlam 'A' Cabin	12-3-1958	10·83			
Chanchelao to Sant Road	28-1-1959	8·97			
Piplod to Limkhera	28-1-1959	7·89			
Jekot to Rentia	31-5-1958	5·47			
Rentia to Dohad	31-5-1958	4·94			
Nahargarh to Udaigarh	24-10-1958	14·10			
Amargarh to Bhairongarh	24-1-1959	10·25			
Bhairongarh to Bildi	25-11-1958	18·31			
Sant Road to Piplod	28-1-1959	11·94			
Bildi to Morwani	12-3-1958	9·17			
Dohad to Dhamarda	7-4-1959	5·71			
Dhamarda to Bordi	1-6-1959	4·94			
Bordi to Anas	28-9-1959	7·89			
Bajrangarh to Panchpimpliya	28-9-1959	7·55			
Limkhera to Mangalmandi	20-10-1959	9·86			
Anas to Nahargarh	19-12-1959	7·79			
Udaigarh to Bajrangarh	15-1-1960	6·26			
Mangalmandi to Usra	29-11-1960	5·25			
Usra to Jekot	29-11-1960	7·48			
Panchpimpliya to Amargarh	23-4-1960	8·71	183·26		
Ratlam Nagda Section—					
Ratlam to Bangrod	15-4-1960	9·77			
Birwania to Chambal Cabin	14-10-1960	5·89			
Bangroad to Kurel Bridge	26-1-1962	2·86			
Diversion over Kurel Bridge	22-2-1962	1·38			
Kurel Bridge to Roonkheda	22-2-1962	3·13			
Roonkheda to Khacharaud	22-2-1962	10·43			
Khachraud to Birwarnia	11-11-1962	5·76	39·22		
Ujjain Maksi Section—					
Tarama Road to Maksi	27-3-1964	9·53	9·53		
Total Ratlam Division B.G. Double line	..	..	..	232·01	
KOTA DIVISION					
Lakheri Bayana Section—					
Rawanja Dungar to Sawai Madhopur	28-8-1963	15·59			
Sawai Madhopur to Ranthambhore	18-12-1963	10·04			
Lalpur Umri to Gangapur City	19-12-1963	6·31			
Shri Mahabirji to Hindaun City	25-3-1964	10·10			
Dumariya to Bayana	27-8-1963	9·05			
Total Kota Division B.G. Double line	..	..	51·09	51·09	
Total Double Line	..	..	..	747·39	

Sections	*Lines under construction*	Route Kilometres
Guna—Maksi		193·35
Ujjain—Maksi (doubling)		45·00
Lakheri—Bayan (doubling)		13·692
	Total	375·27

WESTERN RAILWAY SYSTEM—*contd.*

(i) WESTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*contd.*

Details of Construction

Permanent way—The main line is laid with 40·68 kilograms/metre (82 lbs./yard) bull headed, 44·61 kilograms/metre (90 lbs./yard) BS and 44·61 kilograms/metre (90 lbs./yard) R.B.S. flat-footed steel rails welded in panels of 5 rails on deodar Jarrah sal, oval pot, steel trough C.I. Pot and spring jan pot and CST/9 sleepers. Indore-Dewas-Ujjain Section is laid with 37·13 kilograms/metre (75 lbs./yard) flat-footed steel rails on creosoted chirwood sleepers.

The branches are laid with 44·61 kilograms/metre (90 lbs./yard) R.B.S. 44·61 kilograms/metre (90 lbs./yard) BS 37·13 kilograms/metre (75 lbs./yard) flat-footed 40·68 kilograms /metre (82 lbs./yard) bull-headed, 34·23 kilograms/metre (69 lbs./yard) flat-footed and 31·30 kilograms/metre double-headed rails on steel trough CST/9, C.I. Pots and wooden sleepers. The Godhara-Ratlam-Nagda Section is laid with 44·61 kilograms/metre (90 lbs./yard) B.S. rails and 44·61 kilograms/metre (90 lbs./yard) RBS flat-footed steel rails on transverse steel and cast iron pot sleepers. The Nagda-Mathura Section is laid with 43·16 kilograms/metre (87 lbs./yard) 44·61 kilograms/metre (90 lbs./yard) BS, 44·61 kilograms/metre (90 lbs./yard) R.B.S. flat-footed steel rails on sal deodar, Australian Jarrah, cast iron and steel trough sleepers. The Vasad-Kathana Section is partly laid with 44·61 kilograms/metre (90 lbs. /yard) RBS rails on new CST/9 sleepers and partly with S.H. serviceable, 40·68 kilograms/metre (82 lbs./yard) B. H. rails on S. H. serviceable C. I. Pot Sleepers.

Ballast—The line is mostly ballasted with broken stone, gravel and shingle and coal ash.

Fencing—Excepting the Vasad-Kathna branch, the Patni branch, Boriavi-Vagtal branch, Baroda-Godhra B. G. Main Line Anand Cambay Section, 61·16 kilometres on Anand-Godhra Section and 52·89 kilometres on B. G. Main Line, the line is fenced throughout. 208 kilometres of the Godhra-Ratlam-Nagda section and the station yards only on the rest of the sections are fenced. On the T. V. branch only Station Yards and important level crossings are fenced. On the Vasad-Kathana Section the line is fenced in the Station Yards only.

Curves—The radius of sharpest curves are as follows—

	Metres
On Baroda-Godhra line	349
On Patri Branch	842
On Baroda-Godhra chord	582
On Anand-Godhra	426
On Vasad-Kathana	349
On Boriavi-Vadtal	436
On Godhra-Ratlam-Nagda	305
On Nagda-Mathura	388
On Tapti Valley Branch	305
On Anand-Cambay Section	205
On Indore-Dewas-Ujjain Section	436

Gradients—The ruling gradient on the greater part of the main line is 1 in 500, but there are short lengths of 1 in 200 at the approach to major bridges. At one place there is a gradient of 1 in 100 for a short length. On the Anand-Godhra section the ruling gradient is 1 in 200 except for a short length of 1 in 150 at the approach of Tuwa station and 1 in 100 in the cutting between Kilometre 74·03 and 75·64 on the Patri Branch and the Baroda-Godhra chord the ruling gradient is of 1 in 300 except for a short length of 1 in 200 and 1 in 150 on the latter. On the Anand-Cambay section the ruling gradient is of 1 in 200; on the Vasad-Kathana section, 1 in 400, and on the Boriavi-Vadtal section of 1 in 250. The ruling gradient on the Nagda-Mathura section is 1 in 200 except for short lengths of 1 in 100 to 1 in 150 between Godhra and Jekot. The ruling gradient on the Tapti Valley section is 1 in 200. The ruling gradient on Indore-Dewas-Ujjain Section is 1 in 200.

KOTAH TO BINA (BROAD GAUGE)

Permanent way—The permanent way consists of 43·00 kilograms/metre flat-footed rails on trough sleepers excepting 64·78 kilometres of 39·46 kilograms/metre, F.F. rails on C.I. Plate and 3·22 kilometres of 37·19 kilograms/metre B. H. rails on C.I. Pot.

Ballast—The line is ballasted with broken stone, laterite, kunkar, Sand, Gravel and moorum.

Fencing—The line from Bina to Guna is fenced. The Guna-Barah Section is unfenced except at Stations and the rest of the line is partially unfenced.

Curve—There are no curves with a radius less than 582 metres.

Gradient—The ruling gradient is of 1 in 125.

UJJAIN TO BHOPAL (BROAD GAUGE)

Permanent Way—The track from kilometre 54·23 to kilometre 179·44 has been relaid with 44·61 kilograms/metre (89·92 lbs./yard) RBS rails on wooden and CST/9 sleepers. From kilometres 179·44 to kilometres 194·33 and from kilometres 199·16 to kilometre 235·03 consists of 37·13 kilograms/metre (74·85 lbs./yard) rails on trough and CST/9 sleepers. Track between kilometre 194·33 and kilometre 199·16 consists of 44·61 kilograms/metre (89·92 lbs./yard) RBS on CST/9 sleepers.

Ballast—The line is fully ballasted with broken stone and moorum.

Fencing—The line is fenced only at and in the vicinity of stations, towns and important level crossings.

Curve—There are no curves with a radius of less than 873 metres.

Gradient—The ruling gradient is of 1 in 150.

WESTERN RAILWAY SYSTEM—contd.

(i) WESTERN RAILWAY (BROAD GAUGE—1·676 METRES)—*concld.*

STATISTICS OF WORKING

Statistics prior to 1st April 1951 will be found separately for the constituent units in different tables relating to each one of them. Although the Western Railway was formed on 5th November 1951, the integration has been assumed to have taken place on 1st April 1951 for the purpose of statistics shown in the tables below in respect of the year 1951-2.

In comparing the fluctuations in the financial results, the following changes in accounting and financial structures of Railways effective during the two years 1952-3 and 1953-4, should be borne in mind—

(*i*) The earnings actually collected by a Zonal Railway either in cash or by book adjustment was taken in the accounts as the earnings of that Railway and no apportionment of earnings accruing from the traffic interchanged between the Indian Railways was made.

(*ii*) Inter-Railway adjustments were not made in respect of the expenditure on manufacture, repair and overhaul of rolling stock at workshops of one Railway on behalf of another (except the independent manufacturing units like the Chittaranjan Locomotive Works and the Integral Coach Factory, etc.).

(*iii*) No inter-Railway adjustment was made in the financial accounts of freight charges for the carriage of Railway stores, fuel, etc., *i.e.*, so far as the financial accounts are concerned these stores were carried free of charge.

Table A.—Western Railway—All Gauges combined (Entire System)

Year	Route kilometrage open at end of each year	Total capital outlay including suspense to end of each year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay or capital-at-charge, given in column 3	Payment to General Revenues	§§Gain (+) for loss(—) to the State pertaining to each year	Earnings per route Kilo-metre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
	Kilometres	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1951-2 .	9,697·39	1,11,13,73,429	45,86,77,698	15,21,55,466	13·69	4,38,35,660	+10,83,19,806	905	66·83
1952-3 .	8,934·32	1,09,30,76,760	41,24,49,975	13,47,71,777	*	4,34,18,639	*	*	*
1953-4 .	9,046·80	1,11,07,02,751	41,70,93,585	11,61,62,735	*	4,40,68,225	*	*	*
1954-5 .	9,034·63	1,15,29,66,186	43,67,35,430	11,50,83,152	9·98	4,53,11,001	+6,97,72,151	930	73·65
1955-6 .	9,045·16	1,25,77,27,518	50,05,52,511	14,64,11,769	11·64	4,63,52,577	+10,00,59,192	1,064	70·75
1956-7 .	9,676·12	1,45,33,73,092	55,69,70,224	17,09,24,914	11·76	5,19,57,132	+11,89,67,782	1,109	69·31
1957-8 .	9,680·83	1,61,65,65,027	62,41,73,722	17,91,54,686	11·08	5,93,03,597	+11,98,51,089	1,240	71·30
1958-9 .	9,759·00	1,83,55,55,313	64,87,55,182	16,81,35,369	9·16	6,65,44,043	+10,15,91,326	1,278	74·08
1959-60 .	9,759·17	1,89,47,32,342	70,39,75,006	18,70,96,000	9·87	7,39,62,459	+11,31,33,541	1,387	73·42
1960-1 .	9,759·60	1,97,95,08,089	75,44,21,243	20,64,49,009	10·43	7,32,85,832	+13,31,63,177	1,486	72·63
1961-2 .	9,760·47	2,10,48,03,661	82,06,09,673	22,03,98,102	10·51	10,36,59,385¶	+11,67,38,717	1,617	73·15
1962-3 .	9,755·41	2,30,30,93,165	89,77,61,777	23,24,41,119	10·09	10,91,59,391¶	+12,32,81,728	1,768	74·10
1963-4 .	9,755·42	2,49,66,80,436	96,78,63,862	25,74,95,155	10·31	12,45,61,837¶	+13,29,33,318	1,908	73·40

¶The figures of payment to General Revenues represent the amount of dividend only upto 1960-61. From 1961-62 to 1963-64 these figures are inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961 the figures being Rs. 2,09,46,381, Rs. 2,08,84,041 and Rs. 2,03,99,246 for the years 1961-62, 1962-63 and 1963-64 respectively.

§§The figures of 'gain or loss' do not include the receipts from subsidised companies—Government share of surplus profits, railway miscellaneous receipts, miscellaneous railway expenditure, expenditure on subsidised Railways and expenditure relating to Open Line Works—Revenue.

*These results have not been worked out, as the figures of gross earnings and working expenses as booked in individual Railway's accounts during the years 1952-3 and 1953-4 did not represent the true system-wise apportioned and adjusted figures, as stated above.

NOTE—The figures of capital-at-charge are provisional pending closing of pre-partition accounts and the finalization of the balances of ex-States' railways brought forward on 1st April 1950.

Table B.—Western Railway (broad gauge—1·676 metres)

Year	Route kilometrage open at end of each year	Total capital outlay including suspense to end of each year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay or capital-at-charge, given in column 3	Payment to General Revenues	§§Gain or loss to the State pertaining to each year	Earnings per route Kilo-metre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
	Kilometres	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1951-2 .	2,037·98	62,39,93,277	26,06,19,774	10,28,36,493	16·48	2,46,12,031	7,82,24,462	2,469	60·54
1952-3 .	2,028·40	†	†	†	†	†	†	†	†
1953-4 .	2,074·52	†	†	†	†	†	†	†	†
1954-5 .	2,074·52	66,35,94,669	26,69,22,440	9,10,16,367	13·71	2,22,98,315	6,87,18,052	2,474	90·65
1955 6 .	2,074·17	70,96,05,510	32,19,97,909	12,95,43,425	18·25	2,66,43,593	10,28,99,832	2,985	59·76
1956-7 .	2,551·76	82,11,56,591	34,25,63,114	13,02,65,957	15·77	3,00,36,490	10,02,29,467	2,579	61·97
1957-8 .	2,551·76	22,49,20,085	38,35,71,320	15,00,92,937	16·22	3,41,79,804	11,59,13,133	2,891	60·87
1958-9 .	2,632·95	1,06,14,64,775	39,54,48,326	14,11,02,041	13·29	3,87,52,241	10,23,49,800	2,888	64·32
1959-60 .	2,633·47	1,10,40,72,938	44,05,59,359	16,42,37,023	14·87	4,31,32,071	12,11,04,952	3,217	62·72
1960-1 .	2,633·06	1,16,42,64,617*	46,64,57,444	17,22,15,518	14·79	4,31,01,494	12,91,14,024	3,406	63·08
1961-2 .	2,634·54	1,23,20,77,223	50,85,13,190	18,16,09,230	14·77	6,08,57,611¶	12,07,51,619	3,711	64·29
1962-3 .	2,634·52	1,34,64,69,418	55,71,39,648	20,53,06,918	15·24	6,40,26,548¶	14,12,80,370	4,066	63·15
1963-4 .	2,634·53	1,46,62,06,734	60,88,22,669	22,29,53,527	15·21	7,43,57,608¶	14,85,95,919	4,443	63·38

¶The figures of payment to General Revenues represent the amount of dividend only upto 1960-61. From 1961-62 to 1963-64 these figures are inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April, 1961. The figures being Rs. 1,24,39,381, Rs. 1,23,93,578 and Rs. 1,23,93,329 for the years 1961-62, 1962-63 and 1963-64 respectively.

§§The figures of 'gain or loss' do not include the receipts from subsidised companies—Government share of surplus profits, railway miscellaneous receipts, miscellaneous railway expenditure, expenditure on subsidised Railways and expenditure relating to Open Line Works—Revenue.

†Included under table A above. Separate gauge-wise figures were not recorded.

*Includes Capital Outlay of Rs. 6,54,947·00 P. to the end of 1960-61 on Jhund-Kandla line (B.G.) which was not sanctioned for construction even during 1960-61.

NOTE—The figures of capital-at-charge are provisional pending closing of pre-partition accounts and the finalization of the balances of ex-States Railways brought forward on 1st April 1950.

WESTERN RAILWAY SYSTEM—contd.

(ii) WESTERN RAILWAY (METRE GAUGE—1·000 METRE)—contd.

Progress in Opening

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
BARODA DIVISION					
Main Line—					
Ahmedabad to Palampur	15-11-1879	10·23			
Sabarmati to Bavla	23-2-1903	4·10*	14·33		*41·28 kilometres in Bhavnagar Division.
Ahmedabad-Khed Brahma Section—					
Ahmedabad to Talod	1-5-1897	3·22†	3·22		†138·85 kilometres in Rajkot Division.
Mehsana to Viramgam	1-12-1891	3·28‡			
Viramgam to Surendranagar	14-12-1902		3·28		‡Rest of the kilometres in Rajkot Division.
Total Baroda Division (1·000 metre gauge)		..	20·83		
RATLAM DIVISION					
Khandwa-Ratlam-Ajmer Section—					
Khandwa to Sanawad	1-2-1874	51·97			
Sanawad to Omkareshwar	1-4-1874	5·64			
Omkareshwar to Choral	20-1-1875	33·39			
Choral to Mhow	1-1-1878	24·95			
Mhow to Indore	3-8-1876	20·92			
Indore to Fatehabad Chandrawatiganj Jn.	3-8-1876	39·42			
Fatehabad Chandrawatiganj Jn. to Ratlam Jn.	11-7-1876	79·26			
Ratlam Jn. to Jaora	25-2-1880	33·00			
Jaora to Mandsaur	8-4-1880	51·10			
Mandsaur to Neemuch	2-7-1880	48·68			
Neemuch to Nimbahera	10-3-1881	26·95			
Nimbahera to Chitorgarh	19-3-1881	28·97			
Chitorgarh to Nasirabad	1-12-1881	162·54			
Nasirabad to Ajmer	14-2-1876	21·36§	628·15		§ 1·98 kilometres in Ajmer Division.
Ujjain Branch—					
Fatehabad Chandrawatiganj Jn. to Ujjain	3-8-1876	22·97			
Chitorgarh to Berach	1-12-1881	2·78	25·75		
Total Ratlam Division (1·000 metre gauge)		..	653·90		
KOTAH DIVISION					
Agra East Bank to Bandikui Section—					
Agra East Bank to Agra Fort	1-1-1876	2·26			
Agra Fort to end of Kotah Division	1-1-1876	5·14			
Sawai Madhopur to Nawai	17-10-1907	1·06			
Total Kotah Division (1·000 metre gauge)			8·46		
JAIPUR DIVISION					
Main Line (via Bandikui)—					
Rewari to Alwar	15-9-1874	73·10			
Alwar to Bandikui	7-12-1874	60·33			
Bandikui to Dausa	20-4-1874	28·89			
Dausa to Jaipur	12-10-1874	61·62			
Jaipur to Phulera	1-3-1875	54·35			
Phulera to Ajmer	1-8-1875	77·81‖	356·10		‖ 2·51 kilometres in Ajmer Division.
Rewari—Phulera Chord					
Rewari to Narnaul	11-12-1904	50·11			
Narnaul to Phulera	18-5-1905	163·46	213·57		
Carried over		..	..	1,252·86	

WESTERN RAILWAY SYSTEM—contd.

(ii) WESTERN RAILWAY SYSTEM (METRE GAUGE—1·000 METRE)—contd.

PROGRESS IN OPENING—contd.

Sections of Railway 1	Date of opening 2	Kilometre 3	Total 4	Grand Total 5	Remarks 6
JAIPUR DIVISION—contd.					
Brought forward				1,252·86	
Agra Branch—					
Idgah Agra to Bharatpur	11-8-1873	49·36			
Bharatpur to Bandikui	20-4-1874	96·96			
			146·32		
Branch Lines—					
Sawai Madhopur-Loharu Section—					
Sawai Madhopur to Nawai	17-10-1907	64·55			
Nawai to Sheodaspura	10-11-1905	36·55			
Sheodaspura to Jaipur	26-9-1943	29·13			
Jaipur to Reengus	19-12-1916	57·33			
Reengus to Palsana	6-4-1918	22·77			
Palsana to Sikar	1-12-1922	27·36			
Sikar to Nawalgarh	18-9-1923	27·27			
Nawalgarh to Jhunjhunu	1-8-1924	36·87			
Jhunjhunu to Loharu	21-11-1939	57·57			
			359·40		
Sanganer Town Toda Raisingh Section—					
Sanganer Town to Phagi	1-1-1950	34·60			
Phagi to Diggi	7-4-1950	25·73			
Diggi to Tordisagar	12-5-1953	20·15			
Tordisagar to Todaraisingh	30-3-1954	23·72			
			104·20		
Sikar-Churu Section—					
Sikar to Fatehpur Shekhawati	6-4-1940	47·14			
Fatehpur Shekhawati to Churu	1-3-1957	42·95			
			90·09		
Sambhar Branch—					
Phulera to Sambhar lake	1-3-1875	7·53			
Sambhar lake to Kuchaman Road	20-12-1879	23·90			
			31·43		
Total Jaipur Division (metre gauge—1·000 metres)			1,301·11		
AJMER DIVISION					
Main Line—					
Phulera to Ajmer	1-8-1875	2·51*			*77·81 kilometres in Jaipur Division.
Ajmer to Beawar	15-5-1878	52·18			
Beawar to Haripur	12-8-1879	33·55			
Haripur to Sojat Rd.	20-10-1880	33·24			
Sojat Rd. to Palanpur	1-1-1881	238·71			
Palanpur to Ahmedabad	15-11-1879	3·93†			†Rest of kilometres in Rajkot Division.
			364·12		
Branch Lines—					
Ajmer-Khandwa Section—					
Ajmer to Nasirabad	14-2-1876	1·98‡			‡Rest of kilometres in Ratlam Division.
			1·98		
Palanpur-Deesa-Gandidham-New Kandla Section—					
Palanpur to Deesa	8-11-1893	27·54			
Deesa to Gandhidham	2-10-1952	273·12			
Gandhidham to New Kandla	17-9-1956	11·87			
			312·53		
Gandhidham-Kandla (old) Section—					
Bhildi Yard		1·27			
			1·27		
Gandhidham-Bhuj Section—					
Gandhidham to Anjar	1-12-1954	16·17			
Anjar to Bhuj	7-4-1955	40·54			
			56·71		
Carried over		..	..	2,720·91	

WESTERN RAILWAY SYSTEM—contd.

(ii) WESTERN RAILWAY (METRE GAUGE—1·000 METRE)—contd.

PROGRESS IN OPENING—contd.

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
AJMER DIVISION—contd.					
Brought forward				2,720·91	
Chitorgarh-Udaipur Section—					
Berach to Debari	1-8-1895	97·05			
Debari to Udaipur	25-8-1899	10·36	107·41		
Udaipur Himantnagar Section—					
Udaipur to Udaipur City	19-5-1962	4·19	4·19		
Mavli Junction-Marwar Junction Section—					
Mavli Jn. to Kankroli	1-11-1930	29·31			
Kankroli to Charbhuja Road	20-1-1932	39·52			
Charbhuja Road to Khamblighat	16-11-1932	35·92			
Khamblighat to Marwar Junction	4-2-1936	46·90	151·65		
Marwar Junction—Luni Section—					
Marwar Junction to Luni	..	1·55	1·55		
Mavli Jn. Barisadri Section—					
Mavli Junction to Kheroda	15-1-1948	28·24			
Kheroda to Kanor	18-8-1948	25·65			
Kanor to Bari Sadri	19-11-1949	28·10	81·99		
Total Ajmer Division (metre gauge—1·000 metre)		..	1,083·40		
RAJKOT DIVISION					
Main Line—					
Palanpur to Ahmedabad	15-11-1879	118·93*	118·93		*Rest of kilometres in Baroda Division.
Mehsana-Rajkot-Okha Section—					
Mehsana to Viramgam	1-12-1891	63·94†			†Rest of 2·04 kilometres in Baroda Division.
Viramgam to Surendranagar	14-12-1902	60·42			
Surendranagar to Rajkot	‡4-3-1905	117·45			‡This is the date of opening on metre gauge (1·000 metre) The dates of opening on narrow gauge (0·762 metre) were Wadhwan to Wankaner 1886. Wankaner to Rajkot 1890.
Rajkot to Jamnagar	8-4-1897	80·85			
Jamnagar to Khambalia	1-4-1922	53·24			
Khambalia to Kuranga	1-9-1922	53·48			
Kuranga to Okha	15-11-1922	59·54	488·92		
Branch Lines—					
Ahmedabad-Khed Brahma Section—					
Ahmedabad to Talod	1-5-1897	49·73§			§Rest of kilometres in Baroda Division.
Talod to Prantij	2-7-1897	12·54			
Prantij to Himmatnagar	23-10-1897	21·77			
Himmatnagar to Khed Brahma	1-7-1911	54·81	138·85		
Mehsana-Taranga Hill Branch—					
Mehsana to Vadnagar	21-3-1887	33·37			
Vadnagar to Kheralu	12-12-1888	10·85			
Kheralu to Taranga Hill	20-8-1909	12·46	56·68		
Mehsana-Patan-Kakosi-Metrana Road Section—					
Mehsana to Patan	24-7-1891	39·69			
Patan to Wagrod	15-1-1915	23·80			
Wagrod to Kakosi Metrana Road	28-5-1916	16·08	79·57		
Harij Branch—					
Chanasma to Harij	23-10-1908	20·84	20·84		
Carried over		..	..	3,971·49	

WESTERN RAILWAY SYSTEM—contd

(*ii*) WESTERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway	Date of opening	Kilometres	Total	Grand Total	Remarks
1	2	3	4	5	6
RAJKOT DIVISION—*contd.*					
Brought forward				3,971·49	
Ambliyasan-Vijapur-Kalol-Kadi-Bechrajee-Chanasma Ranuj Section—					
Ambliyasan to Vijapur	1-10-1928	41·54			
Vijapur to Kalol	10-6-1902	47·38			
Kalol to Kadi	13-7-1903	19·30			
Kadi to Bhoyani Road	1-4-1912	12·63			
Bhoyani Road to Katosan Road	1-3-1921	5·29			
Katosan Road to Bechrajee	1-5-1920	25·17			
Bechrajee to Chanasma	23-10-1908	26·68			
Chanasma to Ranuj	22-10-1908	12·68	190·67		
Wankaner-Nawlakhi Section—					
Wankaner to Morvi	*6-6-1924	28·68			*This is the date of opening of metre gauge. (1·000 metre.) Date of opening for narrow gauge (0·762 metre) Wankaner to Morvi is 1887.
Morvi to Navlakhi	15-12-1934	43·50	72·18		
Surendra Nagar to Halwad Section—					
Surendranagar to Dhrangadhra	1-6-1898	34·52			
Dhrangadhra to Halvad	3-3-1915	31·25	65·77		
Than to Chotila	16-6-1926	20·07			
Dahinsara to Malia	10-7-1949	23·16			
Jamnagar to Bedi	8-4-1897	6·32			
Hadmatia to Jodiya	3-10-1940	37·88			
Kanalus to Sika	1-4-1947	14·53			
Khambalia to Salaya	19-1-1939	12·33	114·29		
Kanalus to Lalpur	5-7-1950	1·11†	1·11		†Rest of kilometres in Bhavnagar Division.
Rajkot to Jetalsar	12-4-1893	6·38†	6·38		
Surendranagar to Bhavnagar	20-12-1880	1·11†	1·11		
Total Rajkot Division (metre gauge—1·000 metre)	..	..	1,355·30		
BHAVNAGAR DIVISION					
Main Line—					
Sabarmati to Bavla	23-2-1903	41·28‡			‡ Kilometres 4·10 in Baroda Division.
Bavla to Dholka	1-4-1903	13·45			
Dholka to Kothgangad	1-4-1923	18·27			
Kothgangad to Dhandhuka	1-3-1925	44·05			
Dhandhuka to Tagdi	22-11-1922	10·27			
Tagdi to Botad	16-3-1922	39·09	166·41		
Surendranagar to Bhavnagar	20-12-1880	165·61@			@ Kilometres 1·11 in Rajkot Division.
Bhavnagar to Bundar	..	13·76	179·37		
Dhola to Dhasa	19-1-1881	26·04			
Dhasa to Dhoraji	19-1-1889	118·22			
Dhoraji to Jamjodhpur	1-10-1889	53·87			
Jamjodhpur to Porbandar	1-10-1889	59·51	257·64		
Rajkot Veraval Section—					
Rajkot to Jetalsar	12-4-1893	71·52‖			‖Kilometres 6·38 in Rajkot Division.
Jetalsar to Junagadh	1-9-1888	25·81			
Junagadh to Veraval	1-2-1889	82·85			
Veraval to Bundar	(1-2-1889)		180·18		
Carried over		..	..	5,206·60	

WESTERN RAILWAY SYSTEM—contd.

(ii) WESTERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

PROGRESS IN OPENING—*concld.*

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Grand Total 5	Remarks 6
BHAVNAGAR DIVISION—*contd.*					
Brought forward				5,206·60	
Branch Lines—					
Botad-Jasdan Section—					
Botad to Vinchhia	15-5-1913	29·56			
Vinchhia to Jasdan	15-9-1913	24·01			
			53·57		
Dhasa-Mahuwa Section—					
Dhasa to Lilia Mota	1-10-1911	33·48			
Lilia Mota to Savarkundla	17-3-1912	23·82			
Savarkundla to Ghadhakda	1-2-1921	17·67			
Ghadhakda to Rajula Road	10-6-1922	20·92			
Rajula Road to Mahuwa	22-11-1922	30·57			
Mahuwa to Bundar	..	6·60			
			133·06		
Veraval-Talala-Delvada Section—					
Veraval to Talala	2-4-1918	24·69			
Talala to Jambur	17-3-1920	7·82			
Jambur to Prachi Road	13-11-1923	12·25			
Prachi Road to Jamwala	18-4-1934	11·35			
Jamwala to Delvada	10-1-1935	38·98			
			95·09		
Khijadiya-Dhari Section—					
Khijadia to Gavadka	1-3-1913	26·55			
Gavadka to Chalala	10-3-1914	14·48			
Chalala to Dhari	27-5-1916	19·31			
			60·34		
Junagadh-Visavadar Section—					
Junagadh to Bilkha	20-5-1912	21·45			
Bilkha to Visavadar	15-2-1913	20·76			
			42·21		
Visavadar to Dhari Section—					
Visavadar to Dhari	15-12-1932	31·36			
			31·36		
Talala-Visavadar Section—					
Talala to Sasangir	17-3-1936	17·42			
Sasangir to Visavadar	1937-38	29·97			
			47·39		
Shapur-Saradiya Section—					
Shapur to Manavadar	15-2-1910	25·40			
Manavadar to Bantwa	25-12-1910	5·79			
Bantwa to Saradiya	15-5-1915	11·10			
			42·29		
Kanalus-Gop-Katkola Section—					
Kanalus to Lalpur	5-7-1950	15·52			
Lalpur to Sanosari	17-2-1951	12·24			
Sanosari to Gop	9-3-1951	5·53			
Gop to Katkola	..	32·56			
			65·85		
Ningala to Gadhada	1-1-1929	14·80			
Sihor to Palitana	16-11-1910	27·62			
Rajula Road to Rajula	20-6-1927	9·22			
Dungar to Port Albert Victor	15-3-1928	7·27			
Victor to Bundar	..	4·80			
Kunkavav to Bagsara	24-10-1936	19·47			
Kunkavav to Derdi	19-3-1940	11·46			
Prachi Road to Kodinar	6-4-1938	25·75	120·39		
Total Bhavnagar Division (Metre Gauge—1·000 metre)			1,475·15		
TOTAL METER GAUGE (1·000 METRE)			..	5,898·15	
Double Line—					
BARODA DIVISION					
Ahmedabad to Palanpur	15-4-1956	10·23			
			10·23		
RAJKOT DIVISION					
Sabarmati to Kalol	15-4-1956	16·33			
Kalol-Mehsana Section—					
Kalol to Julasan	8-8-1963	9·65			
Ambliyasan to Jagudan	15-10-1963	7·57			
Jagudan to Mohsana	21-3-1964	9·86	43·41		
JAIPUR DIVISION					
Kishangadh-Madar Section—					
Kishangadh to Madar	26-3-1964	9·50	9·50		
KOTA DIVISION					
Agra Fort to Idgah	1-1-1876	1·71	1·71		
TOTAL DOUBLE LINE (METRE GAUGE—1·000 METRE				64·85	

Lines Under Construction

Sections	Kilometres
Kolal—Mehsana (doubling)	41·04
Kishangadh—Madar Tahiji (doubling)	22·72
Jaipur—Phulera (partial doubling)	37·47
Udaipur—Himmatnagar Section	210·00
Total ..	311·23

WESTERN RAILWAY SYSTEM—contd.

(*ii*) WESTERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

DETAILS OF CONSTRUCTION

(*i*) *Rewari-Ahmedabad* (*via Bandikui*) *main line, Rewari-Phulera Chord, Agra Branch, Sambhar Branch, Ahmedabad-Khed Brahma Branch, Malwa Section, Ujjain Branch, Palanpur-Gandhidham-New Kandla Sections*—

Permanent way—The main line from Rewari to Ahmedabad (*via* Bandikui) is laid with 29·76 kilograms/metre (60 lbs./yard) RBS and 29·76 kilograms/metre (60 lbs./yard) BS rails partly on wooden and on ST and CST/9 sleepers. The sleepers were renewed from 68·49 to kilometres 74·08, kilometres 78·55 to kilometres 95·10 and kilometres 183·81 to kilometres 208·70 by CST/9. The track from kilometres 213·90 to kilometres 243·14 has been relaid with 29·76 kilograms/metre (60 lbs./yard) RBS rails on ST sleepers. From kilometres 272·59 to kilometres 285·91 and kilometres 287·08 to kilometres 290·11 the track has been relaid with CST/9 sleepers. The track from kilometres 292·49 to kilometres 656·25 is laid with 37·13 kilograms/metre (74·85 lbs./yard) rails on CST/9 sleepers and 29·76 kilograms/metres (60 lbs./yard) RBS and BS rails on ST and CST/9 sleepers.

Ahmedabad Khedbrahma—The permanent way consists of 24·89 kilograms/metre (50 lbs./yard) flat-footed rails on CST/9, STS and Salwood sleepers.

Malwa Section—Kilometres 1·95 to kilometres 106·22 have been relaid with 24·80 kilograms/metre (50 lbs./yard) RB S rails on CST/9 and S.T. Sleepers from kilometres 375·78 to kilometres 407·96 relaid with 24·80 kilograms/metre (50 lbs./yard) RBS rails on wooden sleepers; kilometres 516·20 to kilometres 519·42 relaid with 24·80 kilograms/metre (50 lbs./yard) RBS rails on ST sleepers; kilometres 519·42 to kilometres 552·00 is laid with 29·76 kilograms/metre (60 lbs./yard) RBS and A.S.C.E. rails on wooden sleepers; kilometres 552·00 to kilometres 631·26 have been relaid with 42·80 kilograms/metre (50 lbs./yard) RBS rails on steel trough and CST/9 sleepers and the remaining track consists of 42·80 kilograms/metre (50 lbs./yard) N. S. rails on wooden sleepers.

The Ujjain branch from Kilometres 0·00 to Kilometres 19·26 has been relaid with second hand 24·80 kilograms/metre (50 lbs./yard.) rails on wooden sleepers.

Palanpur-Gandhidham—New Kandla—

Permanent way—The track from kilometre 0·00 to kilometres 312·66 is laid with 29·76 kilograms/metre (60 lbs./yard) RBS, 29·76 kilograms/metre (60 lbs./yard) ASCE and RBS/BS rails partly on ST and CST/9 sleepers and 37·13 kilograms metre (74·85 lbs./yard) and 29·76 kilograms/metre (60 lbs./yard) rails on wooden sleepers.

Ballast—The lines are ballasted with stones Kunker, hard quartz and earth.

Fencing—Main lines—The following lines are fenced:—

1. Main line Rewari to Ahmedabad via R.P.C. 756·76 kilometres Rewari-Bandikui and Phulera loop 279·64 kilometres and branches 152·26 kilometres.

2. Malwa Section main line, Khandwa to Ajmer 159·53 kilometres and branches 3·59 kilometres.

3. Sawai Madhopur—Loharu, Sikar-Fatehpur Shekhawati and Sanganer Town-Todaraisingh sections are unfenced except at stations and at points where the main line crosses the Main roads.

4. Chitorgarh-Udaipur Section—The line is unfenced except station yard and level crossings.

Curves—The sharpest curve on this region is of 110 metre radius on Khambhlighat-Phulad Section. The sharpest curve on Palanpur-Gandidham-New Kandla Section is of 134 metres radii.

Gradients—On the main line Rewrai to Ahmedabad via Rewari Phulera Chord, on Rewari Bandikui Phulera loop Ujjain branch and on Palanpur Deesa section the ruling gradient is 1 in 150 and that on Deesa Gandhidham-New Kandla Section it is 1 in 200 except over a short length between Deesa Station and Banas Bridge which is 1 in 150. The ruling gradients on Palanpur—Ghandhidham-New Kandla Section are compensated over crossing on the Agra branch the gradient is 1 in 150 except for 322·48 metres where it is 1 in 142 and 256·36 metres, where it is 1 in 145 at kilometre 61. On the Sambhar branch it is 1 in 200 except for 1,161·29 metre where it is 1 in 150 at the beginning of the line. On the Malwa section it is 1 in 150 except between Khandwa and Kalakhund where it is 1 in 100 and between Kalakhund and Patalpani (Mhow Ghat) it is 1 in 40. On Mehsana Kheralu and Vijapur Kadi Section the ruling gradient is 1 in 150 except 1,554·48 metres between Varetha and Taranga hill where it is 1 in 75. On Mehsana Patan Section it is 1 in 400 except for 259·08 metres between kilometres 9·66 and kilometres 11·27 where it is 1 in 200 on Patan Wagrod Section it is 1 in 150 on Manund Road-Hanej Bhoyani Road it is 1 in 200 and on Ghanasura and Kadi Bhoyani Road section it is 1 in 366. The ruling gradient on Jaipur Sawaimadhopur section is 1 in 200, except at the entry in Jaipur yard where it is 1 in 150 for a very short length of 0·51 kilometres. The ruling gradient from Jaipur to Reengus is 1 in 200 and from Reengus to Loharu is 1 in 150. Ruling gradient on Fatehpur-Shekhawati and Sanganer-town-Todaraisingh branch is 1 in 200.

(*ii*) *Mehsana—Taranga hill—Mehsana-Patan-Kakosi Metrana Road, Chanasma-Harij, Kalol-Bechraji, Mamund Road and Kalol-Vijaypur Ambliasan.*

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) flat-footed rails on wooden sleepers, except kilometres 6·63 to kilometres 7·08, 13·52 to 14·19, 25·73 to 27·34 and 39·01 to 78·86 on Mehsana-Kakosi Section and Chanasma-Harij Section, kilometres 43·45 to 101·39 on Kalol-Mamund Road Section kilometres 48·28 to kilometres 83·69 on Kalol-Vijapur-Ambliyasan Section which are laid with 20·46 kilograms/metre (41¼ lbs./yard) flat-footed rails on STS and wooden sleepers.

Fencing—The line is unfenced except at some stations and at certain points where the line crosses the main road which total 1·09 kilometres.

WESTERN RAILWAY SYSTEM—*contd.*

(*ii*) WESTERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

DETAILS OF CONSTRUCTION—*contd.*

Ballast—The lines are ballasted with stone, lime stone and Kunkar.

Gradients—On the Mehsana-Kheralu and Vijapur-Kadi Sections the ruling gradient is 1 in 150, except for 1,554·48 metres between Varetha and Taranga Hill, where it is 1 in 75. On the Mehsana-Patan Section it is 1 in 400 except for 259·08 kilometres between kilometres 9·66 and kilometres 11·27 where it is 1 in 200. On the Patan Wagrod Section, it is 1 in 150. On the Ramuj Harij and Kadi Bhoyani Road it is 1 in 200 and on the Chanasma Bhoyani Road Section it is 1 in 366.

Curves—The sharpest curve is of 333 metres radius.

(*iii*) *Gandhidham-Bhuj*—

Permanent way—The track is laid with 29·76 kilograms/metre (60 lbs./yard) second hand flat-footed rails on wooden sleepers between Gandhidham and Anjar and 24·80 kilograms/metre (50 lbs./yard) NS rails on wooden sleepers between Anjar and Bhuj.

Ballast—The line is ballasted with stone.

Fencing—The line is unfenced except at station yard and level crossings.

Curves—The sharpest curve on this section is 437 metre radii.

Gradient—The ruling gradient is 1 in 150.

(*iv*) *Jaipur-Sawai Madhopur Section, Jaipur-Loharu Section, Sikar-Fatehpur Shekhawati Section, Sanganer Town—Toda Raisingh Section*—

Permanent way—131·26 kilometres of the Jaipur-Sawai Madhopur section and 108·53 kilometres of the Jaipur-Loharu section which have been relaid with 24·80 kilograms/metre (50 lbs./yard) R.B.S. rails on new sal and teak wood sleepers

The portion of Sikar-Loharu and the Sikar-Fatehpur Shekhawati branch are laid with 18·71 kilograms/metre (41¼ lbs./yard) flat footed steel rails on wooden sleepers.

The Sanganer Town—Toda-Raisingh section is laid with 24·80 kilograms/metre (50 lbs./yard) A.S. rails on wooden sleepers.

Ballast—The lines are ballasted with stone.

Fencing—The lines are unfenced except at stations and at points where the main line crosses the main roads.

Curves—The sharpest curve is of 291 metres radius.

Gradients—Ruling gradient on the Jaipur-Sawai Madhopur section is 1 in 200, except at the entry in Jaipur Yard where it is 1 in 150 for a very short length of 0·51 kilometres Ruling gradient from Jaipur to Reengus is 1 in 200 and from Reengus to Loharu 1 in 150. Ruling gradient on Sikar-Fatehpur Shekhawati branch is 1 in 200. Ruling gradient on Sanganer Town—Toda Raising section 1 in 200.

(*iv*) (*a*) *Fatehpur-Churu Section*—

Permanent way—Fatehpur-Churu Section has been laid with 24·80 kilograms/metre (50 lbs./yard) R.B.S. rails on S.T. sleepers density (N+2) on straight and (N+3) on curves.

Ballast—Line is sand ballasted.

Fencing—Whole of this section is unfenced; even the station yards are not fenced.

Curves—The sharpest curve on this section is 4 degrees, *i.e.*, 437 metres radius.

Gradient—The steepest gradient on this section is 1 in 150 and about 23 per cent of the line is laid with this gradient. The gradients are compensated over the curves (sharpest curve on Jaipur Division, is 235 metres radius on FL-KCR Section).

(*v*) *Chitorgarh—Udaipur Section, Mavli Junction-Marwar Junction Section, Mavli Junction—Barisadri Section*—

Permanent way—

(*a*) *Chitorgarh-Udaipur Section*—The track is laid with 24·80 kilograms/metre (50 lbs./yard) RBS and BS rails partly on wooden partly on Henry Willian pattern steel partly on ST and partly on CST/9 sleepers.

(*b*) *Mavli Junction-Marwar Junction Section*—The track is laid with 24·80 kilograms/metre (50 lbs./yard) BS and RBS on Henry Willian pattern steel and wooden sleepers. In Khamblighat section, the track is laid with 29·76 kilograms/metre (60 lbs./yard) and 37·13 kilograms/metre (74·85 lbs./yard) second hand rails on Henry Willian pattern steel sleepers except on curves of 10° and more where track is laid on wooden sleepers.

(*c*) *Mavli Junction-Bari Sadri Section*—The track is laid with 24·46 kilograms/metre (41¼ lbs./yard) partly on wooden and partly on Henry Willian pattern steel and ST sleepers except from kilometres 227·29 to kilometres 233·59 where 24·80 kilograms/metre (50 lbs./yard) NS and RBS rails are laid on wooden sleepers.

Ballast—Sections are ballasted with stone kunkar and hard quartz.

Fencing—The lines are unfenced except at station yards and at level crossings.

Curves—*Chitorgarh-Udaipur Section*—The sharpest curve on this section is of 240 metres radii.

Mavli Junction-Marwar Junction Section—The sharpest curve on this section is of 110 metres radii on Khamblighat Phulad Section.

Mavli Junction-Bari Sadri Section—The sharpest curve on this section is of 291 metres radii.

Gradients—*Chitorgarh-Udaipur Section*—The ruling gradient between Berach and Khemli is 1 in 120 and that between Khemli and Udaipur is 1 in 100.

Mavli Junction—Marwar Junction Section—The ruling gradient is 1 in 150 except between Khamblighat-Phulad Section where it is 1 on 50 compensated and that from Phulad-Marwar Junction section it is 1 in 100.

Mavli Junction—*Bari Sadri Section*—The ruling gradient on this section is 1 in 150.

WESTERN RAILWAY SYSTEM—contd.

(ii) WESTERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

DETAILS OF CONSTRUCTION—*contd.*

Fencing—The line is unfenced except between Rajkot Jn. and Rajkot town where it passes through Town area and also 2·41 kilometres from Junagadh towards Dungarpur side where it passes near Trunk Road.

Curves—The sharpest curve is 174 metres radius on Ningala Gadhada Branch.

Gradients—The ruling gradient on the greater part is 1 in 150 and steepest gradient 1 in 67 at the approaches of the Bhadar Bridge near Navagadh.

(*i*) *Bhavnagar-Surendranagar Section*—

Permanent way—The permanent way consists of 29·76 kilograms/metre (59·99 lbs./yard) and 24·80 kilograms/metre (50 lbs./yard) and 24·80 kilograms/metre (50 lbs./yard) R flat footed steel rails on JTHR chirwood and steel trough sleepers.

Ballast—The whole line is ballasted with moorum with blinding of stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 457 metres radius.

Gradient—The ruling gradient is of 1 in 200 except for about 11 chains near Ranpur Bhogava Bridge where it if 1 in 100.

(*ii*) *Dhola-Dhasa Section*—

Permanent way—The permanent way consists of 29·76 kilograms/metre (59·99 lbs./yard) and 24·80 kilograms/metre (50 lbs./yard) R flat footed steel rails on JTHR and chirwood sleepers.

Ballast—The line is ballasted with moorum with blinding of stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 436 metres radius.

Gradient—The ruling gradient is of 1 in 200.

(*iii*) *Dhasa-Mahuwa Section*—

Permanent way—The permanent way consists of 24·80, 20·46 and 19·84 kilograms/metre (50, 41¼ and 40 lbs./yard) flat footed steel rails on JTHR and steel trough sleepers.

Ballast—The line is ballasted with moorum with blinding of stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 436 metres radius.

Gradients—The ruling gradient is of 1 in 125 except in some places where it is 1 in 100.

(*iv*) *Sihor-Palitana Section*—

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails on JTHR sleepers

Ballast—The line is ballasted with moorum with blinding stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 305 metres radius.

Gradient—The ruling gradient is of 1 in 100.

(*v*) *Botad-Jasdan Section*—

Permanent way—The permanent way consists of 19·84 kilograms/metre (40 lbs./yard) flat footed rails on JTHR sleepers.

Ballast—The line is ballasted with moorum with blinding of stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 436 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(*vi*) *Botad-Dhandhuka Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) R flat footed steel rails on JTHR and steel trough sleepers.

Ballast—The line is ballasted with moorum with blinding of stone metal and sand.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 436 metres radius.

Gradient—The ruling gradient is of 1 in 150, except at few dips where it is of 1 in 100.

(*viii*) *Rajula Road-Rajula City Section*—

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails on JTHR and salwood sleepers.

Ballast—The line is ballasted with moorum and stone metal.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 218 metres radius.

Gradient—The ruling gradient is of 1 in 125.

(*ix*) *Dunger to Port Albert Victor Section*—

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails on JTHR and salwood sleeper.

Ballast—The line is ballasted with moorum and stone.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 305 metres radius.

Gradient—The ruling gradient is of 1 in 150 except for about 121·92 metres between 22·53 & 24·14 kilometres where it is 1 in 140.

WESTERN RAILWAY SYSTEM—contd.

(*ii*) WESTERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

DETAILS OF CONSTRUCTION—*contd.*

(*x*) *Ningala-Gadhada Section—*

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails on JTHR sleepers.

Ballast—The line is ballasted with moorum and sand.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 175 metres radius.

Gradient—The ruling gradient is of 1 in 100.

(*xi*) *Dhasa-Jetalsar Section—*

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) R flat footed steel rails on deodar sleepers.

Ballast—The line is ballasted with stone metal.

Fencing—The line is practically unfenced.

Curve—The sharpest curve is of 582 metres radius.

Gradient—The ruling gradient is of 1 in 200 except the short portion between Dhoraji-Supedi and near Panell Mot Yard and near Road under Bridge between Dhoraji-Supedi and at Road overbridge between Supedi and Uplete where it is 1 in 150.

(*xii*) *Kunkavav-Bagasra Section—*

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails on deodar sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 291 metres radius.

Gradient—The ruling gradient is of 1 in 200.

(*xiii*) *Kunkavav-Derdi Section—*

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails on deodar sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 218 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(*xiv*) *Jetalsar-Rajkot Junction Section—*

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) R flat footed steel rails on JTHR CST/I and steel trough sleepers.

Ballast—The line is ballasted with stone metal.

Fencing—The line is practically unfenced.

Curve—The sharpest curve is of 349 metres radius.

Gradient—The ruling gradient is of 1 in 150 except the north approaches of Shadar Bridge where it is 1 in 67.

(*xv*) *Jetalsar-Porbandar Section—*

Permanent way—The permanent way consists of 29·76 kilograms/metre (59·99 lbs./yard), 24·80 kilograms/mtere (50 lbs./yard) R flat footed steel rails on JTHR and steel and CST/9 sleepers.

Ballast—The line is ballasted with moorum with blinding of stone metal.

Fencing—The line is practically unfenced.

Curve—The sharpest curve is of 873 metres radius.

Gradient—The ruling gradient is 1 in 150.

(*xvi*) *Rajkot-Jamnagar Section—*

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard), 37·13 kilograms/metre (74·85 lbs./yard) R welded and flat footed steel rails on JTHR chir, steel trough salwood and CST/9 sleepers.

Ballast—The line is ballasted with stone metal.

Fencing—The line is unfenced except at the approaches to the Victoria bridge near Jamnagar and to the south of Jamnagar yard.

Curve—The sharpest curve is of 305 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(*xvii*) *Jamnagar-Bedi Rozi Section—*

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) flat-footed steel rails on JTHR sleepers.

Ballast—The whole line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 175 metres radius.

Gradient—The ruling gradient is of 1 in 150.

WESTERN RAILWAY SYSTEM—contd.

(ii) WESTERN RAILWAY (METRE GAUGE—1·000 METRE)—contd.

DETAILS OF CONSTRUCTION—contd.

(xviii) *Hadmatia-Jodiya Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (40 lbs./yard) flat-footed steel rails on JTHR sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is practically unfenced.

Curve—The sharpest curve is of 582 metres radius.

Gradient—Ruling gradient is 1 in 200.

(xix) *Jamnagar-Khambhalia Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) flat footed steel rails on salwood and chirwood sleepers.

Ballast—The line is ballasted with stone.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 582 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(xx) *Khambhalia-Kuranga Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) flat footed steel rails on JTHR. and salwood sleepers.

Ballast—The line is ballasted with stone.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 582 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(xxi) *Khambhalia-Salaya Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) flat footed steel rails on JTHR sleepers.

Ballast—The line is ballasted with moorum except kilometre 0·00 to kilometre 4·83 which is ballasted with stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 291 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(xxii) *Kanalus-Sika Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) flat footed steel rails on JTHR sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 209 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(xxiii) *Kuranga-Okha Section*—

Permanent way—The permanent way consists of 34·72, 24·80 and 20·46 kilograms/metre (70, 50 and 41½ lbs./yard) flat footed steel rails on JTHR and chirwood sleepers.

Ballast—The line is ballasted with stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 582 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(xxiv) *Jetalsar-Veraval Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) and 29·76 kilograms/metre (59·99 lbs./yard) RBS meladed flat footed steel rails on CST/9 JTHR and steel trough sleepers.

Ballast—The line is ballasted with stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 366 metres radius.

Gradient—The ruling gradient is of 1 in 150 except in some portion between Shapur and Lushala where it is 1 in 100.

(xxv) *Shapur-Saradiya Section*—

Permanent way—The permanent way consists of 20·46 kilograms/metre (41½ lbs./yard) flat footed steel rails on JTHR sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 368 metres radius.

Gradient—The ruling gradient is 1 in 150 except in some portion between kilometres 6·44 and 8·05 where it is 1 in 100.

(xxvi) *Junagadh-Visavadar Section*—

Permanent way—The permanent way consists of 20·46 kilograms/metre (41½ lbs./yard) flat footed steel rails on JTHR and steel trough sleepers except at kilometre 4/10 to kilometre 10/8 and kilometre 22/8 to kilometre 25/10 where it is 37·13 kilograms/metre (74·85 lbs./yard) NSSH on new wooden sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 396 metres radius.

Gradient—The ruling gradient is 1 in 200 except from kilometres 0·00 to 1·61 kilometres which is 1 in 100 and 125.

WESTERN RAILWAY SYSTEM—contd.

(*ii*) WESTERN RAILWAY (METRE GAUGE—1·000 METRE)—*contd.*

DETAILS OF CONSTRUCTION—*contd.*

(*xxvii*) *Veraval-Talala-Delvada Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs. /yard) B. S. on new wooden and ST/ sleepers except from kilometres 51/1 to kilometres 60/10 where it is 20·46 kilograms/metre (41½ lbs./yards) S. H. rails on new wooden sleepers.

Ballast—The whole line is ballasted with moorum and stone metal.

Fencing—The line is practically unfenced.

Curve—The sharpest curve is of 388 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(*xxviii*) *Visavadar-Dhari Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) flat footed steel rails on JTHR sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 58 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(*xxix*) *Talala-Visavadar Section*—

Permanent way—The permanent way consists 24·80 kilograms/metre (50 lbs./yard) flat footed steel rails on JTHR sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 291 metres radius.

Gradient—The ruling gradient is of 1 in 120 except near Satadhar where it is 1 in 100.

(*xxx*) *Surendranagar-Rajkot Section*—

Permanent way—The permanent way consists of 29·76 kilograms/metre (59·99 lbs./yard) and 24·80 kilograms/metre 50 lbs./yards) flat footed steel rails on JTHR sal, steel trough chir and CST/9 sleepers.

Ballast—The line is ballasted with stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 183 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(*xxxi*) *Than-Chotila Section*—

Permanent way—The permanent way consists of 20·66 kilograms/metre (41¼ lbs./yard) flat footed steel rails on JTHR sleepers.

Ballast—The line is ballasted with stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 388 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(*xxxii*) *Wankaner-Navlakhi Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) flat footed steel rails on JTHR and salwood sleepers.

Ballast—The line is ballasted with blinding of stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 218 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(*xxxiii*) *Surendranagar-Halvad Section*—

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails except the portion between kilometre 0·00 to kilometres 32·48 where it is 24·80 kilograms/metre (50 lbs./yard) rails.

Ballast—The whole line is ballasted with stone metal with sand.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 218 metres radius.

Gradient—The ruling gradient is of 1 in 100.

(*xxxiv*) *Khijadiya-Dhari Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs./yard) flat footed SH steel rails on JTHR sleepers.

Ballast—The line is ballasted with moorum with blinding of stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 582 metres radius.

Gradient—The ruling gradient is of 1 in 100.

(*xxxv*) *Prachi Road-Kodinar Section*—

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) and 24·80 kilograms/metre (50 lbs./yard) flat footed steel rails on JTHR sleepers.

Ballast—The line is ballasted with sand except between the kilometres 2,092·14 to 2,414·00 which is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 349 metres radius.

Gradient—The ruling gradient is 1 in 150 except the portion between kilometre 0·00—1·61 where it is 1 in 100.

WESTERN RAILWAY SYSTEM—contd.

(*ii*) WESTERN RAILWAY (METRE GAUGE—1·000 METRE) —*concld.*

DETAILS OF CONSTRUCTION—*concld.*

(*xxxvi*) *Subarmati- Botad Section*—

Permanent way—Track from kilometres 12·02 to kilometres 33·80 relaid with 24·80 kilograms/metre (50 lbs./yard) rails welded in 5 panels on steel trough and CST/9 sleepers, from kilometres 153·42 to kilometres 164·15 relaid with 24·80 kilograms/metre (50 lbs/yard) 'R' rails.

Ballast—The line is ballasted throughout with stone metal.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 276 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(*xxxvii*) *Surendranagar-Mehsana Section*—

Permanent way—The permanent way consists of 24·80 kilograms/metre (50 lbs/yard) flat footed steel rails on wooden sleepers except from Viramgam to Surendranagar, which is laid with 29·76 kilograms/metre (60 lbs./yard) flat footed rails.

Ballast—The line is ballasted with stone metal.

Fencing—The line is practically unfenced.

Curve—The sharpest curve is of 582 metres radius.

Gradient—The ruling gradient is of 1 in 200.

(*xxxvii:*) *Dahinsara-Malia Section*—

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails on JTHB sleepers

Ballast—The line is ballasted with sand.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 218 metres radius.

Gradient—The ruling gradient is of 1 in 200.

(*xxxix*) *Kanalus-Gop Section*—

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails on JTHB sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 291 metres radius.

Gradient—The ruling gradient is of 1 in 150.

(*xl*) *GOP-Katkola Section*—

Permanent way—The permanent way on main line consists of second hand 24·80 kilograms/metre (50 lbs./yard), NS flat-footed rails 9·14 metres long with second hand NS fish plates and fish bolts laid on new salwood sleepers of size 1·83m×0·20m×0·11m without bearing plates. The density of sleepers is N + 2. Permanent way in yard consists of 24·80 kilograms/metre (50 lbs./yard) N.S. second hand fish plates and bolts laid on second hand wooden sleepers size 1·83m×0·20m×1·83m and 1·83m×0·25m×·08m to N + 1 density.

Ballast—The whole line is ballasted with moorum ballast.

Fencing—The line is unfenced.

Curve—The sharpest curve is 436 metres radius.

Gradient—The ruling gradient is 1 in 150.

CONTRACTS— }
RATES & FARES— } As under Western Railway—Broad Gauge.

STATISTICS OF WORKING

For the purpose of these statistics, in respect of the year 1951-2, the Western Railway has been assumed to have been formed on 1st April 1951 instead of 5th November 1951.

TABLE C—*Western Railway* (*Metre Gauge*—1·000 *metre*)

Years	Route kilometrage open at end of each year	Total capital outlay including suspense, to end of each year, i.e. outlay on (*i*) Lines open and (*ii*) Lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Payment to General Revenues	§Gain + or loss — to State pertaining to each year	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
		Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1951-2 . .	6,384·01	43,49,76,225	18,78,69,724	4,96,02,363	11·40	1,71,56,672	3,24,45,691	565	73·59
1952-3 . .	5,661·75	†	†	†	†	†	†	†	†
1953-4 . .	5,726·00	†	†	†	†	†	†	†	†
1954-5 . .	5,749·82	43,46,11,165	15,97,89,375	2,51,76,433	5·79	2,08,49,331	43,27,102	534	84·24
1955-6 . .	5,817·80	49,41,92,384	16,85,77,109	1,89,28,585	3·83	1,75,96,350	13,32,235	557	88·77
1956-7 . .	9,904·02	57,24,84,627	30,37,82,425	4,08,44,850	7·13	1,97,66,551	2,10,78,299	666	79·98
1957-8 . .	5,906·45	63,53,45,912	22,98,88,976	3,17,27,901	5·00	2,30,87,372	86,40,529	749	86·20
1958-9 . .	5,903·43	71,81,07,708	24,39,14,895	3,15,47,433	4·39	2,57,53,772	57,93,661	794	87·07
1959-60 . .	5,903·09	73,53,42,341	25,34,69,611	2,60,79,863	3·55	2,86,89,606	—26,09,743	825	89·71
1960-1 . .	5,904·15	76,11,64,952	27,80,02,185	3,85,36,576	5·06	2,81,81,428	1,03,55,148	905	86·13
1961-2 . .	5,903·64	81,82,86,394	32,08,66,141	4,29,35,606	5·29	4,00,53,658@	28,81,948	980	85·73
1962-3 . .	5,898·15	90,26,75,317	32,96,80,227	3,26,35,863	3·61	4,24,76,770@	—98,40,907	1,074	90·10
1963-4 . .	5,898·15	97,47,29,825	34,72,16,106	4,02,55,408	4·13	4,73,19,535@	—70,64,127	1,132	88·41

Note—The figures of capital-at-charge are provisional pending closing of pre-partition accounts and the finalisation of the balances of ex-State's Railways brought forward on 1st April 1950.

†Included in table A under broad gauge (1·676 metre). Separate gauge-wise figures were not recorded.

@The figures of payment to General Revenues represent the amount of dividend only up to 1960-61. From 1961-62 these figures are inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 961, the figures being Rs. 71,96,659, Rs. 79,01,243 and Rs. 74,06,197 for the years 1961-62, 1962-63 and 1963-64 respectively.

§The figures of 'gain or loss' do not include the receipts from subsidised companies—Government share of surplus profits, railway and miscellaneous receipts, miscellaneous railway expenditure, expenditure on subsidised Railways and expenditure relating to Open Line Works—Revenue.

WESTERN RAILWAY SYSTEM—contd.

(*iii*) WESTERN RAILWAY (NARROW GAUGE—0·762 METRE)

PROGRESS IN OPENING

Sections of Railway (1)	Date of opening (2)	Kilometres (3)	Total (4)	Grand Total (5)	Remarks (6)
BOMBAY DIVISION					
Bilimora-Waghai Section—					
Bilimora to Rankuwa	23-7-1914	21·47			
Rankuwa to Unai	22-1-1915	20·39			
Unai to Kalamba	1-5-1917	14·21			
Kalamba to Dungarda	1-4-1926	3·40			
Dungarda to Waghai	1-11-1929	3·25			
Total Bombay Division—Narrow Gauge (0·762 metres)			62·72		
BARODA DIVISION					
Kosamba-Umerpada Section—					
Kosamba to Zankhvav	1-5-1912	41·36			
Zankhvav to Umerpada	1-7-1929	20·60	61·96		
Ankleshvar-Rajpipla Section—					
Ankleshvar to Rajpardi	1-7-1897	30·29			
Rajpardi to Umalla	19-1-1899	7·96			
Umalla to Amletha	1-6-1899	12·62			
Amletha to Rajpipla	20-7-1899 } 10-11-1917 }	11·73	62·60		
Jhagadia-Netrang Section—					
Jhagadia to Netrang	1-3-1932	30·15	30·15		
Broach Jambusar-Kavi Section—					
Broach to Jambusar	23-11-1914	47·33			
Jambusar to Kavi	1-8-1929	26·07			
Kavi to Kavi Bundar	..	2·77	76·17		
Samni-Dahej Section—					
Samni to Dahej	1-3-1930	39·28	39·28		
Vishwamitri-Jambusar Section—					
Vishwamitri to Padra	1-7-1897	10·67			
Padra to Mobha	10-7-1903	14·82			
Mobha to Masor Road	1-11-1904	10·44			
Masor Road to Jambusar	1-5-1917	11·77	47·70		
Vishwamitri-Chandod Section—					
Vishwamitri to Goya Gate	24-1-1881	3·41			
Goya Gate to Dabhoi	1-7-1880	27·36			
Dabhoi to Chandod	15-4-1879	16·27	47·04		
Dabhoi Timba Section—					
Dabhoi to Jarod	15-11-1913	38·37			
Jarod to Samlaya	13-12-1915	8·56			
Samlaya to Timba	1-2-1919	53·46	100·39		
Carried over				528·01	

WESTERN RAILWAY SYSTEM—contd.

(*iii*) WESTERN RAILWAY (NARROW GAUGE—0·762 METRE)—*contd.*

PROGRESS IN OPENING—*contd.*

Sections of Railway (1)	Date of opening (2)	Kilometres (3)	Total (4)	Grand Total (5)	Remarks (6)
Brought forward .				528·01	
Dabhoi-Chhota Udaipur Section—					
Dabhoi to Sankheda Bahadarpur	17-9-1879	15·32			
Sankheda Bahadarpur to Bodeli	16-1-1890	20·46			
Bodeli to Chhota Udaipur	1-12-1917	36·15			
			71·93		
Nadiad-Pihij-Petlad-Bhadran Section—					
Nadiad to Pihij	15-8-1953	6·84			
Pihij to Vaso	17-4-1915	5·26			
Vaso to Petlad	10-12-1914	24·27			
Petlad to Bhadran	1-6-1922	21·32			
			57·69		
Miyagam-Dabhoi Section—					
Miyagam to Dabhoi	8-4-1873	32·21			
			32·21		
Miyagam-Malasar Section—					
Miyagam to Malasar	15-1-1921	38·09			
			38·09		
Choranda-Koral Section—					
Choranda to Koral	10-11-1921	18·67			
			18·67		
Chhuchhapura-Tankhala Section—					
Chhuchhapura to Tankhala	15-3-1923	38·00			
			38·00		
Nadiad Kapadvanj Section—					
A point near Nadiad to Kapadavanj . . .	5-3-1913	44·66			
			44·66		
Champaner-Shivrajpur Pani Section—					
Champaner Road Junction to Shivrajpur . . .	24-1-1911	27·74			
Shivrajpur to Ghanta	2-4-1915	9·50			
Ghanta to Nathpura	25-5-1916	5·00			
Nathpura to Pani	15-11-1916	6·89	49·13		
Godhra Lunavada Section—					
Godhra to Lunavada Road	4-12-1913	40·68			
			40·68		
Total Baroda Division Narrow Gauge (0·762 metre) .			919·07		
RATLAM DIVISION					
Piplod-Devgad Baria Section—					
Piplod to Devgad Baria	1-1-1929	15·11			
Total Ratlam Division—Narrow Gauge (0·762 metre) .			15·11		
Carried over .				934·18	

WESTERN RAILWAY SYSTEM—contd.

(*iii*) WESTERN RAILWAY (NARROW GAUGE—0·762 METRE)—*contd.*

PROGRESS IN OPENING—*concld.*

Sections of Railway (1)	Date of opening (2)	lometre (3)	Total (4)	Grand Total (5)	Remarks (6)
Brought forward .				934·18	
RAJKOT DIVISION					
Morvi Sanala to Tankara	1894-1895	20·23			
Sanala to Khanpur	1925-1926	17·88			
Khanpur to Amran Rd.	1927-1928	3·22			
Morvi to Jetpur	1904-1905	23·04			
Jetpur to Khakhrechi	1927-1928	9·05			
Khakhrechi to Ghantila	1933-1934	12·68			
Total Rajkot Division Narrow Gauge (0·762 metre) .			86·10		
BHAVNAGAR DIVISION					
Bhavnagar to Talaja	5-1-1926	58·15			
Talaja to Mahuva	20-3-1938	50·08			
Joravarnagar to Sayla	1-4-1948	27·31	108·23		
			27·31		
Total Bhavnagar Division—Narrow Gauge (0·762 metre) .			135·54		
TOTAL OPEN KILOMETRAGE—NARROW GAUGE (0·762 METRE)				1,155·82	
RATLAM DIVISION					
NARROW GAUGE (0·610 METRE)					
Ujjain to Agar (*a*)	15-3-1932	66·92			(*a*) Transferred from Central Railway from 1-3-1957.
Total Ratlam Division—Narrow Gauge (0·610 metre) .			66·92		
TOTAL OPEN KILOMETRAGE—NARROW GAUGE (0·610 METRE)				66·92	

DETAILS OF CONSTRUCTION

Chandod-Dabhoi section, Goya-Gate-Jembusar Section, Dabhoi-Timba section, Dabhoi-Bodeli section Miyagam—Dabhoi section, Miyagam-Malsar section, Choranda-Koral Motipura-Tankhala section, Bilimora-Waghai section, Kosamba-Umerpada section, Petlad-Pihij section, Petlad-Bhadran section, Broach-Jambusar section, Jambusar-Kavi section, Samni-Dahej section.

Permanent way—On the Dabhoi Section the line is relayed with 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails on wooden sleepers except the following :—

0·80 kilometres of Choranda Koral Railway is laid with 14·88 kilograms/metre (30 lbs./yard) flat footed rails. Masor Road-Jambusar Miyagam-Malsar, Dabhoi-Timba and Motipura-Tanakhala railways are laid with 14·88 kilograms/metre (30 lbs./yard) flat footed rails on wooden rectangular sal and half round top sawn teak sleepers.

On the Bilimora-Waghai, Petlad-Nadiad and Petlad-Bhadran sections, the line is laid with 14·88 kilograms/metre (30 lbs./yard) and 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails and wooden rectangular sal, half-round teak and half round top sawn sleepers except Dungarda to facing point of Waghai station yard which is of 15·38 kilograms/metre (31 lbs./yard) rails.

WESTERN RAILWAY SYSTEM—contd.

(*iii*) WESTERN RAILWAY (NARROW GAUGE—0·762 METRE)—*contd.*

DETAILS OF CONSTRUCTION—*contd.*

The Kosamba-Zankhvav-Umerpada section is laid with 20·46 kilograms/metre (41¼ lbs./yard) steel rails and half round jungle teak and jarrah sleepers, with rectangular sal and half round top sawn sleepers except Keori and Umerpada section yards which are laid with 14·88 kilograms/metre (30 lbs./yard) rail.

The Broach-Jambusar Railway with its branches is laid with second hand 26·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails partly on sal and partly on half round jungle wood sleepers.

Ballast—The Dabhoi, Bilimora-Waghai, Petlad Nadiad, Petlad-Bhadran and Kosamba Umerpada sections are ballasted with sand, gravel or moorum with metal blinding on sand or shingle in places.

The Broach-Jambusar railway with its branches is ballasted with sand.

Fencing—Only the station yards of the Dabhoi, and Petlad Nadiad Petlad Bhadran sections are fenced. The rest of the lines are unfenced.

Curves—The sharpest curve has a radius of 110·03 metres on the Petlad-Nadiad line, of 152 metres on the Dabhoi line, of 183 metres on the Kosamba-Umerpada line, of 218 metre on the Bilimora-Waghai line, and of 184 metres radius on Broach Jambusar Kavi Railway and of 303 metres on Samni Dahej Railway.

Gradients—The ruling gradient is 1 in 400 on the Dabhoi line, with small lengths of 1 in 100, 1 in 150, 1 in 193, 1 in 200 and 1 in 300, 1 in 500 on the Petlad-Nadiad, 1 in 200 on Petlad-Bhadran line, 1 in 150 on the Bilimora-Dungarda line, 1 in 100 on Dungarda to Waghai, 1 in 200 on the Kosamba Zankhvav line, with short lengths of 1 in 150, 1 in 125, 1 in 100, and 1 in 80 on Zankhvav-Umerpada extensions, 1 in 200 on Broach Jambusar-Kavi Railway and 1 in 500 on Samni-Dadej Railway.

Bodeli-Chhota Udaipur Section—

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) flat footed rails laid on half round teak rectangular sal and half round teak top sawn sleepers.

Ballast—The line is ballasted with sand and metal blinding on sand in places.

Fencing—The line is fenced at important level crossings only.

Curves—The sharpest curve is 249 metres radius.

Gradients—The ruling gradient is 1 in 200.

Champaner Road Junction-Pani Mines Section—

Permanent way—The permanent way consists of 14·63 kilograms/metre (29½ lbs./yard) and 21·08 kilograms/metre (41½ lbs./yard) flat footed steel rails on wooden sleepers and 14·88 kilograms/metre (30 lbs./yard) on wooden and steel sleepers.

Ballast—The line is ballasted with sand and metal blinding.

Fencing—The line is unfenced except at station yards.

Curves—The sharpest curve is of 215 metres radius.

Gradients—The ruling gradient is 1 in 100.

Godhra-Lunavada Section—

Permanent way—The permanent way consists of 14·88 kilograms/metre (30 lbs./yard) flat footed rails on steel trough sleepers I.S.R. Pattern.

Ballast—The line is laid on coarse and hard sand ballast, covered with quartz ballast.

Fencing—Only certain station yards have been fenced.

Curves—The sharpest curve has a radius of 183 metres.

Gradients—The ruling gradient is 1 in 100.

Nadiad-Kapadvanj Section—

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) flat footed rails on wooden and steel sleepers.

Ballast—The line is ballasted with sand and metal blinding.

Fencing—The line is unfenced, except in station yards.

Curves—The sharpest curve is of 218 metres radius.

Gradients—The ruling gradient is 1 in 100.

Piplod -Devgad-Baria Section—

Permanent way—The permanent way consists of flat footed steel rails British Standard section weighing 17·36 kilograms/ metre, 9.14 metres long on steel trough sleepers.

Ballast—The line is ballasted with broken stone.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 350 metres radius.

Gradients—The ruling gradient is 1 in 100.

WESTERN RAILWAY SYSTEM—contd.

(*iii*) WESTERN RAILWAY (NARROW GAUGE—0·762 METRE)—*contd.*

DETAILS OF CONSTRUCTION—*concld.*

Ankleshvar-Rajpipla Section Jhagadia-Netrang Section—

Permanent way—The line is laid with 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel and iron rails on half round jungle teak sal and Australian sleepers.

Ballast—The line is ballasted chiefly with coarse river sand.

Fencing—Only the station yards.

Curves—The sharpest curve is of 436 metres radius on the Rajpipla State Railway and 146 metres radius on the Jhagadia Netrang Railway.

Gradients—The ruling gradient on the Rajpipla State Railway is 1 in 150. Between Nandod station and Nandod Town it is 1 in 100. The ruling gradient on the Jhagadia Netrang Railway is 1 in 75.

Kutch Section—

Permanent way—The permanent way consists of 14·88 kilograms/metre (30 lbs./yard) and 20·46 kilograms/metre (41¼ lbs./yard) flat footed steel rails on wooden sleepers, from Anjar to Bhuj and Anjar to Bhimasar respectively.

Ballast—The line is ballasted with stone and hard moorum.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 436 metres radius.

Gradients—The ruling gradient is 1 in 100 between Anjar and Bhuj and 1 in 150 on Warsamedi-Bhimasar lines.

Bhavnagar-Mahuva Section, Morvi Sanala-Tankara Section, Sanala-Amran Road Section, Morvi—Ghantila section. Joravarnagar—Sayla section—

Permanent Way—The line is laid with 20·46, 14·88, 14·39, 12·40 and 9·43 kilograms/metre (50, 41¼, 30, 29, 25 and 19 lbs./yard) on Jodka teak half round and steel trough sleepers.

Ballast—The whole line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 58 metres radius.

Gradient—The ruling gradient is 1 in 100 and steepest gradient is 1 in 75 on Bhavnagar Talaja section.

Bhavnagar-Mahuva section, Joravarnagar-Sayla section—

Permanent way—The permanent way consists of 24·80, 20·46, 14·88, and 12·40 kilograms/metre (50, 41¼, 30 and 29 lbs./yard) flat footed steel rails of JTHR sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 58 metre radius near Tansa.

Gradient—The ruling gradient is 1 in 75.

Morvi-Sanala-Tankara Section—

Permanent way—The permanent way consists of 20·46,14·88 and 14·39 kilograms/metre (41¼, 30 and 29 lbs./yard) flat footed steel rails on JTHR sal and STS sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 77 metres radius.

Gradient—The ruling gradient is of 1 in 175.

Morvi-Ghantila Section—

Permanent way—The permanent way consists throughout of 20·46, and 14.39 kilograms/metre (41¼ and 29 lbs./yard) flat footed steel rails on JTHR, sal and STS sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 125 metres radius.

Gradient—The ruling gradient is of 1 in 133.

Sanala—Amran Road Section—

Permanent way—The permanent way consists of 20·46 and 9·43 kilograms/metre (41¼ and 19 lbs./yard) flat footed steel rails on JTHR sal sleepers.

Ballast—The line is ballasted with moorum.

Fencing—The line is unfenced.

Curve—The sharpest curve is of 249 metres radius.

Gradient—The ruling gradient is of 1 in 125.

Ujjain-Agar Section—

Permanent way—Permanent way consist of 15·04 kilograms/metre (30·31 lbs./yard) rails on trough and wooden sleepers.

Ballast—The line is ballasted with broken stone and moorum.

Fencing—The section is fenced with pallisade wooden fence at a few places in the crowded parts of Ujjain City.

Curve—The sharpest curve on the Section is of 6 metres radius.

Gradient—The ruling gradient is of 1 in 55.

CONTRACTS }
RATES AND FARES } As under Western Railway—Broad Gauge.

WESTERN RAILWAY SYSTEM—concld.

(*iii*) WESTERN RAILWAY (NARROW GAUGE)—*concld.*

STATISTICS OF WORKING

Table D. Western Railway narrow gauge (0·762 metre and 0·610 metre)

For the purpose of these statistics, in respect of the year 1951-2 the Western Railway has been assumed to have been formed on 1st April 1951 (instead of 5th November 1951)

Year	Route Kilometrage open at end of each year	Total capital outlay including suspense, to end of each year, i.e. outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in col. 3	Payment§ to General Revenue	‡Gain (+) or loss (—) to State pertaining to each year	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10
1951-2 .	1275·41	5,24,03,927	1,01,88,200	—2,83,393	—0·54	20,66,957	—23,50,350	169	102·7
1952-3 .	1244·17	†	†	†	†	†	†	†	†
1953-4 .	1246·28	†	†	†	†	†	†	†	†
1954-5 .	1210·29	5,47,60,352	1,00,23,615	—11,09,648	—2.02	21,63,355	—32,73,003	159	111·1
1955-6 .	1153·19	5,39,29,624	99,77,493	—20,60,241	—3·82	21,12,634	—41,72,875	167	120·65
1956-7 .	1220·33	5,52,76,874	1,06,24,685	—1,85,893	..	21,54,091	—23,49,984	167	101·84
1957-8 .	1222·62	5,62,99,030	1,07,13,426	—26,66,152	..	20,36,421	—47,02,573	168	124·88
1958-9 .	1222·62	5,59,82,830	93,91,961	—45,14,105	*Nil*	20,38,030	—65,52,135	147	148·05
1959-60 .	1222·62	5,48,17,046	99,46,036	—32,20,886	*Nil*	21,40,782	—53,61,668	156	132·38
1960-1 .	1222·39	5,40,78,519	99,61,614	—43,03,085	*Nil*	20,02,910	—63,05,995	156	143·19
1961-2 .	1,222·39	5,44,40,045	1,12,30,342	—41,46,734	Nil	27,48,116*	—68,94,850	177	136·92
1962-3 .	1,222·74	5,39,84,430	1,09,41,902	—55,01,662	Nil	26,56,073*	—81,57,735	175	150·28
1963-4 .	1,222·74	5,57,43,877	1,18,25,087	—57,13,780	Nil	28,84,694*	—85,98,474	186	148·32

* The figures of payment to General Revenues represent the amount of dividend only upto 1960-61. From 1961-62 to 1963-64 these figures are inclusive of the amount paid in lieu of the tax on passenger fares which had been merged with the passenger fares with effect from the 1st April 1961 the figures being Rs. 6,10,341, Rs. 5,89,220 and Rs. 5,99,720 for the years 1961-62, 1962-63 and 1963-64 respectively.

‡ The figures of 'gain or less' do not include the receipts from subsidised companies—Government share of surplus profits, railway miscellaneous receipts, miscellaneous railway expenditure, expenditure on subsidised Railways and expenditure relating to open Line Works-Revenue.

NOTE—The figures of capital-at-charge are provisional pending closing of pre-partition accounts and the finalization of the balances of ex-State railways brought forward on 1 April 1950.

† Included under 1·676 metre gauge in table A. Separate gauge-wise figures were not recorded.

CHAPTER X

NON-GOVERNMENT AND PORT TRUST RAILWAYS

A—NON-GOVERNMENT RAILWAYS

1. AHMADPUR-KATWA RAILWAY (NARROW GAUGE—0·762 METRE)

Secretaries & Treasurers—Messrs. McLeod & Co., Calcutta

Date of registration of the Company—3rd November 1915

Sanction to the construction of this line by the Ahmadpur Katwa Railway Company was conveyed in Railway Board's Notification No. 314, dated 16 November 1914.

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4
Ahmadpur to Pachandi	30-5-1917	39·62	
Pachandi to Katwa	29-9-1917	12·30	
Total	..	..	51·92

DETAILS OF CONSTRUCTION

Permanent way—The permanent way consists of 15·876 kilograms/metre (35 lbs./yard) flat-footed and second hand 32·680 kilograms/metre (50 lbs./yard) rails laid on sal sleepers and 0·59 kilometres only on steel sleepers.

Ballast—The line is ballasted with moorum, except at points and crossings and on some open top bridge approaches and cuttings where stone or brick ballast is used.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 175 metres radius.

Gradients—The ruling gradient is 1 in 150.

CONTRACT

Dated 8 May 1922, *between the Secretary of State and the Ahmadpur Katwa Railway Company Limited* as to the construction, maintenance and working of the line.

MAIN PROVISIONS OF CONTRACT

The same as noted under Burdwan Katwa Railway, except that the earliest date when the Secretary of State could determine the contract, by giving 12 months' previous 'Notice of purchase', was 31st March 1948. The option to purchase the line was neither exercised in 1948 nor in 1958 by the Government of India. Next option will fall due on 31st March 1968.

STATISTICS OF WORKING

Year	Route Kilometrage open at end of each year	Total capital outlay, including suspense, to end of each year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Guaranteed interest recoverable from Government	Total income (col. 5 + col. 7)	Percentage of total income on total capital outlay given in column (3)	Earnings per route Kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11
	Kilometre	Rs.	Rs.	Rs.		Rs.	Rs.		Rs.	
1917-8	51·92	19,50,145	54,497	—780	..	30,170	29,390	1·51	27	101·45
1918-9	51·92	19,65,836	94,197	—23,602	..	83,942	60,340	3·07	35	125·06
1919-20	51·92	19,74,361	1,22,315	46,589	2·36	44,903	91,492	4·63	45	61·91
1920-1	51·92	19,76,164	1,35,114	14,286	0·72	58,227	72,513	3·67	50	89·43
1921-2	51·92	19,82,474	1,24,624	—11,749	..	85,971	74,222	3·74	46	109·42
1922-3	51·92	20,34,873	1,30,486	—14,769	..	90,626	75,857	3·73	48	111·32
1923-4	51·92	20,11,641	1,27,506	17,218	0·85	58,230	75,448	3·75	47	86·49
1924-5	51·92	19,93,377	1,35,687	20,482	1·03	54,925	75,407	3·78	50	84·90
1925-6	51·92	19,89,418	1,66,325	46,001	2·31	27,476	73,477	3·69	62	72·34
1926-7	51·92	20,02,891	1,52,890	26,776	1·34	46,331	73,107	3·65	57	82·49
1927-8	51·92	20,28,957	1,38,573	10,435	0·51	64,336	74,771	3·69	52	92·47
1928-9	51·92	20,36,005	1,20,098	—23,046	—1·13	99,848	76,802	3·77	45	119·19
1929-30	51·92	20,51,587	1,34,194	3,909	0·19	72,983	76,892	3·75	50	97·00
1930-1	51·92	20,76,727	1,16,476	—20,046	—0·96	97,935	77,889	3·75	43	117·21
1931-2	51·92	20,76,704	1,10,258	13,324	0·64	66,146	79,470	3·83	41	87·92
1932-3	51·92	20,73,299	1,15,325	22,471	1·08	55,062	77,533	3·74	43	80·52
1933-4	51·92	20,73,277	1,11,292	13,232	0·64	63,842	77,074	3·72	41	88·11
1934-5	51·92	20,72,648	1,06,613	15,817	0·76	62,319	78,136	3·77	40	85·16
1935-6	51·92	20,72,648	87,757	3,292	0·16	74,433	77,725	3·75	32	96·25
1936-7	51·92	20,72,387	84,769	—11,577	—0·56	89,578	78,001	3·76	32	113·66
1937-8	51·92	20,72,387	99,366	2,433	0·12	74,492	76,925	3·71	37	97·55
1938-9	51·92	20,74,705	1,06,377	4,384	0·21	69,783	74,167	3·57	39	95·88
1939-40	51·92	20,74,672	1,17,455	3,542	0·17	70,455	73,997	3·57	43	96·98
1940-1	51·92	21,18,858	1,12,324	—1,782	—0·08	76,118	74,336	3·51	42	101·59
1941-2	51·92	20,95,049	1,23,187	—10,631	—0·51	85,293	74,662	3·56	45	108·63
1942-3	51·92	20,93,897	1,45,385	—50	—0·00	74,565	74,615	3·56	44	99·97
1943-4	51·92	20,92,265	2,02,723	39,426	1·88	35,183	74,609	3·57	75	80·55
1944-5	51·92	20,87,512	2,42,990	31,142	1·49	43,442	74,584	3·57	90	87·18
1945-6	51·92	21,10,950	2,84,859	40,771	1·93	33,838	74,609	3·53	106	85·69
1946-7	51·92	21,49,517	2,86,286	19,972	0·93	53,955	73,927	3·44	106	93·02
1947-8	51·92	21,39,816	3,32,868	8,912	0·42	64,912	73,824	3·45	123	97·32
1948-9	51·92	21,37,697	4,06,109	49,774	2·33	24,164	73,938	3·46	150	87·74
1949-50	51·92	21,51,702	3,33,338	36,407	1·69	36,169	72,576	3·37	160	91·60
1950-1	51·92	21,20,575	4,58,483	75,172	3·54	..	75,172	3·54	170	83·60
1951-2	51·92	20,94,954	4,91,127	35,116	1·67	36,352	71,468	3·41	182	92·85
1952-3	51·92	20,87,908	4,99,621	45,607	2·18	25,223	70,830	3·39	185	90·87
1953-4	51·92	20,87,698	5,36,754	27,533	1·32	43,540	71,073	3·40	199	94·37
1954-5	51·92	20,70,291	5,48,710	—29,367	—1·42	1,00,437	71,070	3·43	203	105·35
1955-6	51·92	20,71,727	5,94,474	99,888	4·82	—869	99,019	4·77	221	83·20
1956-7	51·92	20,67,631	5,52,308	31,431	1·52	39,623	71,054	3·44	204	94·31
1957-8	51·92	20,65,196	5,73,995	—53,744	—2·56	1,24,819	71,075	3·44	213	109·30
1958-9	51·92	20,70,630	6,66,995	16,562	·79	54,515	71,077	3·43	247	97·52
	51·92	21,26,124	6,09,135	—1,90,053	—8·93	2,61,125	71,072	3·34	225	131·20
60-61	51·92	21,87,545	6,32,653	—1,57,299	—7·18	2,34,369	77,070	3·52	234	124·86
1961-2	51·92	22,31,986	7,30,080	—2,52,424	—11·31	3,38,099	85,675	3·84	270	134·56
1962-3	51·92	22,31,986	7,61,311	—2,66,140	—11·92	3,48,972	82,832	3·71	282	134·95
1963-4	51·92	22,31,986	7,81,265	—3,11,823	—13·91	4,07,402	95,579	4·28	289	139·91

A—NON-GOVERNMENT RAILWAYS-contd.

2. ARRAH-SASARAM LIGHT RAILWAY (NARROW GAUGE—0·762 METRE)

Managing Agents—Messrs. Martin Burn Ltd., Calcutta

Date of registration of the Company—19th October 1909

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4	Remarks 5
Arrah to Sasaram	6-3-1911	97·37		
Sasaram to Tarachandi Hill	12-11-1914	7·49*		*For goods traffic only.
Total .			104·86	

DETAILS OF CONSTRUCTION

Permanent way—The permanent way consists of 14·88 kilograms/metre (30 lbs./yard) flat-footed steel rails on sal sleepers except that 24·89 kilograms/metre (50 lbs./yard) F. F. rails are laid on sal sleepers for 8·24 kilograms/metre.

Ballast—The line is ballasted with broken stone and moorum.

Fencing—The line is unfenced except at certain station yards.

Curves—The sharpest curve is of 174 metres radius between Arrah and Sasaram and 116 metres between Sasaram and Tarachandi Hill.

Gradients—The ruling gradient is 1 in 250 between Arrah and Sasaram, and 1 in 100 between Sasaram and Tarachandi Hill.

LOCAL GOVERNMENT ORDERS AND AGREEMENTS

The Arrah Sasaram Tramway Company order published under the Bengal Government, Railway Department Notification No. 39-R., dated 12th October 1909, authorizing the construction of a line from Arrah to Sasaram in the district of Shahabad.

Agreement, dated 15th October 1909 *between the District Board of Shahabad and Messrs. Martin and Company of Calcutta (called "the Promoters"), by and on behalf of the Arrah-Sasaram Light Railway Company*, as to the grant of a concession to the Company of the right to construct and work the line.

Agreement, dated 30th October 1912 (supplemental to the agreement of 15th October 1909), *between the District Board of Shahabad and the Arrah Sasaram Light Railway Company*.
The Arrah Sasaram Tarachandi Hill extension order published under the Bihar and Orissa Government, Railway Department, Notification No. 4760-R., dated 8 September 1913; } as to the construction, maintenance and working of the extension from Sasaram to Tarachandi Hill as a part of the Arrah-Sasaram Light Railway.

MAIN PROVISIONS OF LOCAL GOVERNMENT ORDERS AND AGREEMENTS

(i) *Land*—Provided at the cost of the Company, except one side of the district road the free use of which is authorised.

(ii) *Aid by the Local authority*—The District Board of Shahabad recommend and apply to the Local Government to exempt the Company from the tax on account of road cess, or to exact only a nominal tax, for a period of 21 years from the date when the line is opened for traffic, with power of renewal. The Board also guarantee to supplement the net earnings of the Company by such annual subsidy as may be necessary to allow of it paying a dividend of 4 per cent per annum on their share capital, provided that the total liability of the Board on this account in any one year shall not exceed Rs. 88,000 or the sum of 4 per cent on the Company's share capital whichever is less.

(iii) *Distribution of profits*—Surplus profits in excess of 4 per cent, after setting aside such funds as the Directors may decide, on the capital for the time being of the Company, are divisible equally between the District Board of Shahabad and the Company.

(iv) *Rates and fares*—In addition to fixing certain maxima and minima for goods and coaching traffic the Central Government reserve to themselves full control over charges of all kinds.

(v) *Special obligations as to the conveyance of*—

(a) Mails, postal officers and servants on duty—To be conveyed at the rates and on the conditions in force from time to time on State railways.

(b) Troops, police high Government officials and Government stores— } *Nil.*

(c) Government bullion and coin, and the persons in charge thereof— } *Nil.*

(vi) *Power of the Local authority to determine agreement*—Upon the expiration of 21 years from the date of the Local Government order authorizing the construction of the line, or at the end of every 7 years thereafter, the District Board have, by giving six months' previous notice, the right of purchasing the line by paying to the Company 25 times the average yearly net earnings of the 3 years preceding the purchase, subject to a maximum of 120 and minimum of 100 per cent of the capital cost.

(vii) *Power of the Company to surrender agreement*—Nil.

(viii) *Term of agreement [if not determined under* (vi)]—Not specified.

A—NON-GOVERNMENT RAILWAYS—contd.

2. ARRAH-SASARAM LIGHT RAILWAY (NARROW GAUGE—0·762 METRE)—*concld.*

STATISTICS OF WORKING

Those for the periods prior to 1913-4 will be found in Appendix 1 to the Railway Administration Report for 1913-4.

Year	Route kilometrage open at end of each year	Total capital outlay, including suspense, to end of each year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Amount credited to Renewal Reserve Account	Subsidy from (+) or share of surplus profits to (—), the District Board	Total income	Percentage of total income on total capital outlay given in column (3)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11	12
	Kilometre	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.		Rs.	
1913-4	97·37	22,31,449	1,94,799	71,403	3·20	..	+17,932	89,335	4·00	39	63·34
1914-5	105·03	22,75,170	2,12,951	88,320	3·99	..	+253	88,573	3·89	39	58·52
1915-6	104·86	22,88,079	1,96,050	79,328	3·46	..	+13,256	92,584	4·04	36	59·53
1916-7	104·86	22,80,626	2,26,342	1,00,239	4·39	..	..	1,00,239	4·39	42	55·71
1917-8	104·86	22,67,557	2,53,527	1,36,342	6·01	25,000	—7,394	1,03,948	4·58	47	46·22
1918-9	104·86	22,58,480	2,47,766	1,16,406	5·15	8,000	—5,196	1,03,210	4·57	45	53·01
1919-20	104·86	22,68,185	2,79,390	1,14,181	5·03	5,000	—5,873	1,03.308	4·55	51	59·13
1920-1	104·86	22,65,007	2,89,000	1,09,564	4·83	..	—6,326	1,03,238	4·55	53	62·08
1921-2	104·86	23,18,908	3,02,312	1,04,205	4·49	..	..	1,04,205	4·49	55	65·58
1922-3	104·86	23,38,807	3,70,882	1,59,786	6·83	10,000	—23,735	1,26,051	5·39	68	56·91
1923-4	104·86	23,44,041	3,47,582	1,32,904	5·67	10,000	—11,596	1,11,308	4·75	63	61·76
1924-5	104·86	23,41,015	3,61,821	1,27,145	5·43	20,000	—8,460	98,685	4·22	66	64·86
1925-6	104·86	23,46,452	3,72,101	1,52,631	6·50	20,000	—11,509	1,21,122	5·16	68	58·98
1926-7	104·86	23,41,561	4,13,505	2,05,261	8·76	40,000	—20,333	1,44,928	6 19	76	50·36
1927-8	104·86	23,50,610	4,11,128	1,54,753	6·51	20,000	—19,230	1,35,523	5·77	75	62·33
1928-9	104·86	23,73,208	3,77,124	1,42,078	5·98	10,000	—11,467	1,30,611	5·50	69	62·32
1929-30	104·86	23,24,964	4,32,658	1,65,915	6·57	40,000	—20,003	1,45,912	5·78	80	61·66
1930-1	104·86	25,16,585	4,17,530	1,32,897	5·30	60,000	—1,682	1,31,215	5·21	76	68·17
1931-2	104·86	25,08,734	3,86,333	1,04,727	4·17	70,000	+17,805	1,22,532	4·88	71	72·89
1932-3	104·86	25,19,857	3,56,969	90,071	3·57	80,000	+31,857	1.21,928	4·84	65	74·79
1933-4	104·86	25,11,669	3,03,968	39,280	1·56	80,000	+77,330	1,16,610	4·64	56	87·08
1934-5	104·86	25,19,885	3,53,506	1,06,892	4·20	50,000	—10,156	96,736	4·20	65	69·70
1935-6	104·86	25,57,160	3,55,671	1,16,385	4·55	50,000	—6,132	1,10,253	4·31	65	67·20
1936-7	104·86	25,52,169	3,27,322	1,00,397	3·90	47,048	+2,446	1,02,843	4·03	60	69·30
1937-8	104·86	25,58,156	3,43,743	1,10,726	4·32	50,000	+12,012	1,22,738	4·79	63	67·79
1938-9	104·86	25,62,452	3,82,063	1,33,466	5·21	50,000	+7,226	1,40,692	5·49	70	65·06
1939-40	104·86	25,49,517	4,28,583	1,69,783	6·65	50,000	—16,388	1,53,395	6·01	78	60·39
1940-1	104·86	25,84,697	4,54,897	1,70,487	6·59	50,000	—3,975	1,66,512	6·44	83	62·52
1941-2	104·86	26,56,678	5,15,606	1,85,541	6·98	50,000	—15,816	1,69,725	6·38	94	64·02
1940-3	104·86	26,63,600	4,37,225	99,777	3·74	50,000	+13,098	1,12,875	4·23	80	77·17
1943-4	104·86	26,69,212	7,37,072	3,43,606	12·87	50,000	—30,455	3,13,151	11·73	135	53 39
1944-5	104·86	26,85,024	8,43,968	3,95,567	14·73	50,000	—31,667	3,63,900	13·55	155	53·13
1945-6	104·86	26,84,625	9,21,855	4,08,725	15·22	50,000	—45,298	3,63,427	13·53	169	55·66
1946-7	104·86	26,80,103	9,06,485	3,15,241	11·76	50,000	—47,388	2,67,853	9·99	167	65·23
1947-8	104·86	26,72,704	11,98,881	4,68,267	17·52	50,000	—56,230	4,12,037	15·42	220	60·94
1948-9	104·86	28,33,280	14,93,149	5,35,888	18·91	50,000	—87,056	4,48,832	15·84	274	64·11
1949-50	104·86	29,54,676	14,88,882	3,02,868	10·25	1,21,050	—48,274	2,54,594	8·62	273	79·66
1950-1	104·86	30,74,602	14,24,989	77,600	2·52	2,42,149	—3,774	73,826	2·40	262	94·55
1951-2	104·86	30,92,063	16,00,765	3,48,074	11·26	84,284	—22,484	3,25,590	10·53	293	78·25
1952-3	104·86	31,24,615	15,31,954	1,81,711	5·82	78,482	—11,167	1,70,544	5·46	281	88·13
1953-4	104·86	31,09,926	17,01,984	2,49,763	8·03	75,465	—41,949	2,07,814	6·68	312	85·32
1954-5	104·86	33,48,586	17,41,687	1,49,895	4·47	85,398	Nil	1,49,895	4·47	319	91·3[illegible]
1955-6	104·86	33,88,294	18,34,509	2,74,623	8·10	45,438	—18,280	2,56,343	7·50	336	85·20
1956-7	104·86	35,21,826	19,57,821	3,60,191	10·22	80,624	—24,891	3,35,300	9·52	359	81·62
1957-8	104·86	35,35,494	18,51,284	2,07,961	5·88	..	+28,263	2,36,224	6·68	339	88 76
1958-9	104·86	35,65,092	17,63,125	1,97,158	5·53	55,779	+32,511	2,29,669	6·44	323	88·82
1959-60	104·86	35,38,756	19,51,638	3,43,736	9·71	75,712	—11,139	3,32,597	9·39	358	82·39
1960-1	104·86	35,36,296	19.57.439	2,68,610	7·60	85,956	—18,521	2,50,089	7·07	359	86·27
1961-2	104·86	35,42,820	20,03,722	3,03,621	8·57	73,349	—20,412	2,83,209	7·99	367	84·85
1962-3	104·86	35,65,645	20,54,731	2,54,450	7·13	75,525	—3,230	2,51,220	7·04	377	87·62
1963-4	104·86	35,65,484	20,19,253	1,51,411	4·25	94,453	—2,183	1,49,228	4·18	370	92·50

A—NON-GOVERNMENT RAILWAYS—contd.

3. BANKURA-DAMOODAR RIVER RAILWAY (NARROW GAUGE—0·762 METRE)

Secretaries and Treasurers—Messrs. McLeod & Co., Calcutta.

Date of registration of the Company—30th March 1914.

Sanction to the construction of this line by the Bankura-Damoodar River Railway Company was conveyed in Railway Board's Notification No. 103, dated 1 May 1914.

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total
Bankura to Indas	15-12-1916	68·14	
Indas to Sehara Bazar	1-4-1917	18·77	
Sehara Bazar to Rainagar	6-6-1917	9·57	
Total	..	..	96·48

DETAILS OF CONSTRUCTION

Permanent way—The permanent way consists of 15·876 kilograms/metres (35 lbs./yards) flat-footed B.S.S. rails la mostly on sâl sleepers and only about 3·22 kilometres on steel sleepers.

Ballast—Moorum is used on embankments and stone ballast on cuttings, curves and points and crossings.

Fencing—The line is unfenced.

Curves—The sharpest curve has a radius of 94 metre at Bankura.

Gradients—The ruling gradient is 1 in 150.

CONTRACT

Dated 6 September 1918, *between the Secretary of State and the Bankura-Damoodar River Railway Company, Limited*, as to the construction, maintenance and working of the line.

MAIN PROVISIONS OF CONTRACT

The same as noted under Burdwan Katwa Railway, except the earliest date when the Secretary of State may, by giving 12 months' previous "Notice of purchase" determine the contract, which is 31st March 1947. The option to purchase the line was neither excercised in 1947 nor in 1957 by the Government of India. Next option will fall due on 31st March 1967.

STATISTICS OF WORKING

Year 1	Route kilometrage open at end of each year 2	Total capital outlay, including suspense to end of each year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction 3	Gross earnings 4	Net earnings 5	Percentage of net earning on total capital outlay given in column (3) 6	Guaranteed interest recoverable from Government 7	Total income 8	Percentage of total income on total capital outlay given in column (3) 9	Earnings per route kilometre per week 10	Proportion of expenses to earnings 11
	Kilometers	Rs.	Rs.	Rs.		Rs.	Rs.		Rs.	
1916-7	68·70	33,93,875	22,433	2,485	0·07	..	..	..	6	88·92
1917-8	96·48	35,57,279	1,28,046	6,928	0·19	59,489	66,417	1·87	25	94·58
1918-9	96·48	35,43,089	1,83,444	14,618	0·41	1,04,382	1,19,000	3·36	37	92·03
1919-20	96·48	35,49,983	2,26,327	82,530	2·32	57,079	1,39,609	3·93	45	63·53
1920-1	96·48	35,71,273	1,75,548	4,139	0·12	1,22,337	1,26,476	3·54	35	97·64
1921-2	96·48	36,34,462	1,95,998	7,883	0·22	1,22,720	1,30,603	3·59	39	95·98
1922-3	96·48	36,55,386	1,79,891	—48,545	..	1,81,163	1,32,618	3·63	36	126·99
1923-4	96·48	36,50,919	1,99,030	43,621	1·19	86,909	1,30,530	3·58	40	78·08
1924-5	96·48	36,37,036	2,21,827	40,621	1·12	88,518	1,29,139	3·55	44	81·69
1925-6	96·48	36,47,323	2,23,531	25,547	0·70	1,03,026	1,28,573	3·53	45	88·57
1926-7	96·48	37,20,710	2,14,525	14,808	0·40	1,16,651	1,31,459	3·53	43	93·10
1927-8	96·48	38,06,152	2,11,574	—16,591	..	1,56,331	1,39,740	3·67	42	107·84
1928-9	96·48	38,40,152	1,82,486	—53,253	—1·39	1,97,427	1,44,174	3·75	37	129·18
1929-30	96·48	39,84,380	2,02,261	—27,571	—0·69	1,74,336	1,46,765	3·68	40	113·63
1930-1	96·48	40,18,583	1,62,248	—69,457	—1·73	2,24,186	1,54,729	3·85	32	142·81
1931-2	96·48	40,28,744	1,50,916	—33,133	—0·82	1,90,459	1,57,326	3·91	30	121·95
1932-3	96·48	40,17,135	1,50,438	11,772	0·29	1,38,247	1,50,019	3·73	30	92·17
1933-4	96·48	40,16,973	1,61,592	20,474	0·51	1,26,372	1,46,846	3·66	32	87·33
1934-5	96·48	40,07,447	1,33,283	2,283	0·06	1,45,288	1,47,571	3·68	27	98·29
1935-6	96·48	40,01,461	1,10,745	—34,642	—0·87	1,82,165	1,47,523	3·69	22	131·28
1936-7	96·48	40,18,777	1,14,148	—9,643	—0·24	1,57,043	1,47,400	3·67	23	108·45
1937-8	96·48	40,21,254	1,18,950	—15,406	..	1,56,527	1,41,121	3·50	24	112·95
1938-9	96·48	40,10,841	1,26,536	—15,713	..	1,55,673	1,39,960	3·49	25	112·42
1939-40	96·48	40,09,788	1,25,870	—27,374	—0·68	1,67,415	1,40,041	3·49	25	121·75
1940-1	96·48	40,22,594	1,28,998	—23,221	—0·58	1,63,567	1,40,346	3·49	25	118·00
1941-2	96·48	40,35,997	1,49,786	—19,376	—0·48	1,60,604	1,41,228	3·50	30	112·93
1942-3	96·48	40,32,610	1,95,868	—13,072	—0·32	1,53,727	1,40,655	3·49	39	106·67
1943-4	96·48	40,62,180	2,64,429	7,535	0·19	1,34,929	1,42,464	3·51	53	97·15
1944-5	96·48	40,60,226	4,08,019	86,077	2·12	55,066	1,41,143	3·48	81	78·90
1945-6	96·48	40,83,585	4,61,945	60,464	1·48	81,727	1,42,191	3·48	92	86·91
1946-7	96·48	40,85,632	5,28,469	64,959	1·59	76,833	1,41,792	3·47	106	87·71
1947-8	96·48	41,06,052	5,82,765	33,573	0·82	1,08,200	1,41,773	3·45	116	94·24
1948-9	96·48	41,55,051	6,99,336	34,196	0·82	1,10,207	1,44,403	3·48	139	95·11
1949-50	96·48	42,60,380	7,59,714	15,989	0·38	1,29,084	1,45,073	3·41	152	97·90
1950-1	96·48	42,68,800	7,78,931	5,678	0·13	1,40,129	1,45,807	3·42	155	99·27
1951-2	96·48	41,96,996	7,78,873	—52,903	—1·26	1,99,305	1,46,402	3·49	155	106·79
1952-3	96·48	42,17,423	8,51,125	65,769	1·56	82,703	1,48,472	3·52	170	92·27
1953-4	96·48	43,30,259	9,10,837	1,13,152	2·61	34,097	1,47,249	3·40	181	87·58
1954-5	96·48	43,05,709	9,18,014	46,607	1·08	1,04,257	1,50,864	3·50	183	94·92
1955-6	96·48	42,72,682	9,23,690	1,82,398	4·27	..	1,82,398	4·27	184	80·25
1956-7	96·48	42,63,346	9,00,507	29,112	0·68	1,12,901	1,42,013	3·33	180	96·77
1957-8	96·48	42,95,686	8,79,601	(—) 1,70,381	—3·97	3,16,412	1,46,031	3·40	175	119·29
1958-9	96·48	41,30,202	9,11,624	(—) 99,515	—2·31	2,48,644	1,49,129	3·61	181	110·91
1959-60	96·48	41,86,602	8,05,044	(—)5,79,472	—13·28	7,23,373	1,43,901	3·44	160	171·91
1960-1	96·48	44,69,609	7,67,859	(—)4,03,822	—8·19	5,59,897	1,56,075	3·49	153	152·59
1961-2	96·48	45,80,330	8,60,421	(—)4,66,034	—10·17	6,20,443	1,54,409	3·37	171	154·16
1962-3	96·48	45,83,668	7,70,063	(—)5,53,895	—12·08	7,12,973	1,59,078	3·47	173	163·66
1963-4	96·48	45,99,285	9,30,330	(—)5,28,614	—11·49	7,29,536	2,00,922	4·37	185	156·82

4. BURDWAN KATWA RAILWAY (NARROW GAUGE—0·762 METRE)

Secretaries & Treasurers—Messrs. McLeod & Co., Calcutta

Date of registration of the Company—1913

Construction of this line by the Burdwan Katwa Railway Company was authorised in Railway Board's Telegram No. 3711-R.C., dated 30 December 1913.

Progress in Opening

Section of Railway 1	Date of opening 2	Kilometres 3	Total 4
Burdwan to Katwa	1-12-1915	52·25	52·25

Details of Construction

Permanent-way—The permanent-way consists of 15·876 kilograms/metre (35-lbs./yard) flat-footed rails laid on sal sleepers and 2·5 kilometres only on steel sleepers.

Ballast—The line is ballasted with moorum, except at points and crossings and on some open top bridge approaches where stone or brick ballast has been used.

Fencing—The line is not fenced.

Curves—The sharpest curve has a radius of 76 metres at Shrikhanda station.

Gradients—The ruling gradient is 1 in 200.

Contract

Dated 5 April 1917, *between the Secretary of State and the Burdwan Katwa-Railway Company Limited*, as to the construction, maintenance and working of the line.

Main Provisions of Contract

(*i*) *Land*—Provided by Government free of cost to the Company.

(*ii*) *Government aid* } (*iii*) *Distribution of profits*— } When the net receipts shall not be sufficient to pay interest at the rate of 3·5 per cent. per annum on the paid-up share capital, the Secretary of State shall pay the Company a sum which together with the net receipts will make up an amount equal to 3·5 per cent. When the net receipts for any year do not exceed 5 per cent. per annum on the paid-up share capital the whole of such net receipts shall belong to the Company. When the net receipts in any year exceed 5 per cent on the paid-up share capital such excess shall be divided equally between the Secretary of State and the Company.

(*iv*) *Rates and fares*—Rates and fares shall be such as may from time to time be sanctioned by the Secretary of State and the classification of goods shall be in conformity with that from time to time in force on State Railways of a similar gauge.

(*v*) *Special obligations as to the conveyance of mails, troops, police, etc.*—To be conveyed in the same manner and subject to the same regulations and conditions as are in force on State Railways of similar gauge.

(*vi*) *Power of Government to determine contract*—The Secretary of State may at any time, by giving six months' notice, assume the working of the railway by State or any other agency, if the Company are guilty of any breach of contract, or gross mismanagement, or if the working expenses have exceeded the gross earnings for three consecutive years.

The Secretary of State may, by giving 12 months' previous "Notice of purchase," determine the contract either on 31st March 1946 or on 31st March in the last year of any subsequent period of ten years, paying to the Company a sum of money equal to 25 times the amount of the average of the yearly net earnings during the 3 years immediately preceding, but the amount so payable shall not exceed by more than 20 per cent the total capital expenditure or be less than such capital expenditure.

The option to purchase the line was neither exercised in 1946 nor in 1956 by the Government of India. Next option will fall due on 31st March 1966.

The Secretary of State may also, by giving 12 months' previous "Notice of special purchase," determine the contract at any time in the following cases:—

(*a*) When it is considered desirable that the gauge of the Railway should be altered.

(*b*) When it is desired to convert the Railway into a line of through communication.

(*c*) When it is desired to extend the Railway and the Company does not, within six months from date of formal requisition, raise such additional capital.

If the contract is determined by "Notice of special purchase" the Secretary of State shall pay the Company 25 times the average of yearly net earnings during the 3 years immediately preceding or 115 per cent. of the total capital expenditure which ver may be greater.

(*vii*) *Power of the Company to surrender contract*—Nil.

(*viii*) *Terms of contract*—Shall remain in force until determined under (*vi*) above.

A—NON-GOVERNMENT RAILWAYS—contd.

4. BURDWAN KATWA RAILWAY (NARROW GAUGE—0·762 METRE)—*concld.*

STATISTICS OF WORKING

Year	Route kilo-metrage open at end of each year	Total capital outlay, including suspense, to end of each year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Guaranteed interest recoverable from (+) or moiety of profits payable to (—) Government	Total income	Percentage of total income on total capital outlay given in column (3)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11
	Kilometres	Rs.	Rs.	Rs.		Rs.	Rs.		Rs.	
1915 6	52·34	17,26,605	38,464	18,625	1·08	..	..	..	14	51·57
1916-7	52·34	17,81,915	1,33,399	8,570	0·48	+54,229	62,799	3·52	48	93·57
1917-8	52·34	17,98,301	1,32,146	32,104	1·79	+29,688	61,792	3·44	48	75·70
1918-9	52·34	18,08,582	1,41,455	33,814	1·87	+28,486	62,300	3·44	52	76·10
1919-20	52·25	18,12,488	1,70,823	67,538	3·73	..	67,538	3·73	63	60·46
1920-1	52·25	18,17,502	1,67,010	38,017	2·08	+24,093	62,110	3·40	62	77·23
1921-2	52·25	18,27,184	1,74,917	33,279	1·82	+29,238	62,517	3·42	65	80·97
1922-3	52·25	18,31,350	1,96,088	36,497	1·99	+25,996	62,493	3·41	72	81 39
1923-4	52·25	18,30,650	2,05,620	79,598	4·35	..	79,598	4·35	76	61·29
1924-5	52·25	18,46,003	2,11,579	76,994	4·17	..	76,994	4·17	78	63·61
1925-6	52·25	18,59,230	2,33,742	92,173	4·96	—859	91,314	4·91	86	60·57
1926-7	52·25	18,73,409	2,14,099	68,111	3·64	..	68,111	3·64	79	68·19
1927-8	52·25	19,46,584	2,10,943	50,545	2·59	+19,195	69,740	3·58	78	76·04
1928-9	52·25	19,87,909	1,76,741	16,708	0·84	+56,359	73,067	3·68	66	90·55
1929-30	52·25	20,19,348	2,06,913	42,382	2·10	+31,687	74,069	3·67	76	79·52
1930-1	52·25	20,34,326	1,93,937	19,051	0·94	+55,250	74,301	3·65	71	90·18
1931-2	52·25	20,47,677	1,78,391	32,175	1·57	+44,011	76,186	3·72	68	81·96
1932-3	52·25	20,43,657	1,72,552	44,261	2·17	+30,934	75,195	3·68	63	74·35
1933-4	52·25	20,40,381	1,60,525	31,050	1·52	+44,333	75,383	3·69	59	80·66
1934-5	52·25	20,33,168	1,42,293	25,373	1·25	+53,481	78,854	3·88	52	82·17
1935-6	52·25	20,40,485	1,12,556	74	..	+80,901	80,975	3·97	42	99·93
1936-7	52·25	20,41,792	1,11,985	—4,839	—0·24	+85,955	81,116	3·97	41	104·32
1937-8	52·25	20,53,862	1,28,341	8,604	0·42	+67,843	76,447	3·72	47	93·80
1938-9	52·25	20,68,048	1,28,985	400	0·02	+73,012	73,412	3·55	47	99·69
1939-40	52·25	20,72,285	1,32,781	—3,918	—0·19	+77,326	73,408	3·54	49	102·95
1940-1	52·25	20,47,155	1,34,025	—3,526	—0·17	+76,600	73,074	3·57	49	102·63
1941-2	52·25	20,53,830	1,63,976	28,646	1·39	+44,354	73,000	3·55	60	82·55
1942-3	52·25	20,65,375	2,27,698	59,830	2·90	+13,170	73,000	3·53	83	73·72
1943-4	52·25	20,90,615	4,13,273	1,96,023	9·38	—7,160	1,88,863	9·03	152	52·57
1944-5	52·25	21,10,213	3,62,574	86,206	4·09	..	86.206	4·09	132	76·22
1945-6	52·25	21,26,947	3,62,035	24,393	1·15	+48,586	72,979	3·43	133	93·26
1946-7	52·25	21,15,126	3,31,865	—25,803	—1·22	+97,910	72,102	3·41	122	107·78
1947-8	52·25	21,12,900	4,01,216	—12,051	—0·57	+85,613	73,562	3·48	148	103·00
1948-9	52·25	22,10,473	4,78,043	52,102	2·36	+21,677	73,779	3·34	176	89·10
1949-50	52·25	21,79,449	4,96,734	—1,184	—0·05	+77,526	76,342	3·50	183	100·24
1950-1	52·25	21,92,273	4,86,227	—20,577	—0·94	+96 828	76,251	3·48	179	104·23
1951-2	52·25	21,71,786	5,55,025	47,191	2·17	+28,779	75,970	3·50	204	91·50
1952-3	52·25	21,79,762	5,82,634	1,16,390	5·34	..	1,16,390	5·34	214	80·02
1953-4	52·25	23,05,669	5,83,686	57,121	2·48	19,693	76,814	3·33	215	90·21
1954-5	52·25	22,98,659	6,10,986	78,839	3·43	1,895	80,734	3·51	225	87·10
1955-6	52·25	22,89,404	5,89,163	59,581	2·60	21,197	80,778	3·53	217	89·89
1956-7	52·25	23,45,586	4,37,790	—1,36,336	—9·73	2,17,101	80,765	3·44	161	131·14
1957-8	52·25	23,43,201	4,96,707	—2,28,472	—1·34	3,09,620	81,148	3·46	183	145·93
1958-9	52·25	21,78,933	5,60,150	—31,414	—12·31	1,12,201	80,787	3·71	206	195·60
1959-60	52·25	22,47,818	4,99,140	—2,93,271		3,74,152	80,881	3·60	184	158·75
1960-1	52·25	23,61,194	5,74,865	—1,61,995	—6·50	2,52,353	90,358	3·83	220	128·18
1961-2	52·25	25,34,212	5,68,580	—3,07,176	—12·12	4,06,576	99,400	3·92	209	154·02
1962-3	52·25	25,95,347	6,44,495	—3,49,634	—13·47	4,47,792	98,158	3·78	237	154·25
1963-4	52·25	26,17,601	7,19,581	—2,90,854	—11·11	4,20,138	1,29,284	4·94	265	140·41

5. DEHRI ROHTAS LIGHT RAILWAY (NARROW GAUGE—0·762 METRE)

Managing Agents—MESSRS. SAHU, JAIN LTD., DALMIANAGAR (BIHAR)

Date of registration of the Company—17 March 1909

PROGRESS IN OPENING

Section of Railway	Date of opening	Kilometres	Total
1	2	3	4
Dehri-on-Sone to Rohtas	6-2-1911	38·77	38·77
Rohtas to Tiura Pipradih (opened for good traffic)	16-4-1958	27·98*	66·75
Opened for passenger traffic	28-12-1958		

*Out of 27·98 Kms, Rohtas to Rohtas Fort, *i.e.*, 2·70 Kms. was opened on 1-12-1927. This section was, however, not worked between 1935 and 16-4-1958.

NOTE—The line from kilometre 40 to kilometre 66·75 runs on the private line of M/s Rohtas Industries Ltd. This is being worked by the Dehri Rohtas Railway for public carriage of passengers and goods traffic under an agreement with the said company.

A—NON-GOVERNMENT RAILWAYS—*contd.*

5. DEHRI-ROHTAS LIGHT RAILWAY (NARROW GAUGE—0·762 METRE)—*contd.*

DETAILS OF CONSTRUCTION

Permanent way—The permanent way consists of 20·46 kilograms/metre (41¼ lbs./yard) 22·32 kilograms/metre (45 lbs./yard) 24·80 kilograms/metre (50 lbs./yard) and 27·28 kilograms/metre (55 lbs./yard) and 29·85 kilograms/metre steel rails on sal wood and cast iron (CST I type) sleepers.

Ballast—The whole line is ballasted.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 107 metres radius.

Gradients—The ruling gradient is 1 in 150, uncompensated.

AGREEMENT AND LOCAL GOVERNMENT ORDERS

Agreement dated 13th October 1907, *between the District Board of Shahabad and Messrs Octavius Steel and Company of Calcutta (called "the Promoters") for and on behalf of the Dehri-Rohtas Tramway Company, scheduled to the order quoted below.*

The Dehri-Rohtas Tramway Company order published under the Bengal Government Railway Department Notification No. 24-R., dated 10th November 1908.

} As to the construction, maintenance and working of the line from Dehri-on-Sone to Rohtas.

Agreement dated 4th June 1909 *between the District Board of Shahabad, Messrs. Octavius Steel and Company and Dehri-Rohtas Tramway Co. Ltd.*, by which the Dehri-Rohtas Tramway Co. Ltd. entered into direct relationship with the Board for construction and working of the tramways, discharging the Promoters from all liability under their previous agreements and setting forth the terms and conditions for construction, maintenance and working of the tramways.

Agreement dated 20th December 1924 *between the District Board of Shahabad and the Dehri-Rohtas Light Railway Co. Ltd.*, for extension from Rohtas Station to Akbarpore.

Agreement *between Dehri-Rohtas Light Railway Co. Ltd. and M/s Rohtas Industries Ltd.*, dated 27th December 1952 for Nasriganj Private Siding.

Agreement *between Dehri-Rohtas Light Railway Co. Ltd. and M/s Rohtas Industries Ltd.*, dated 27th December 1952 for assisted siding from Dehri city to Dalmianagar Factories.

Agreement *between Dehri-Rohtas Light Railway Co. Ltd. and M/s Dalmia Jain & Co. Ltd.*, (now Parsva properties Ltd.), dated 27th December 1952 for Murli Assisted Siding.

Agreement *between Dehri-Rohtas Light Railway Co. Ltd. and the District Board of Shahabad*, dated 7th August 1953 for extension of the railway line upto the village of Purcha in the near future and maintenance and working of the railway.

Agreement *between Dehri-Rohtas Light Railway Co. Ltd. and M/s Rohtas Industries Ltd.*, dated 30th June 1954 for Rohtas Pipradih Siding.

Agreement (Supplementary) *between Dehri-Rohtas Light Railway Co. Ltd. and M/s Rohtas Industries Ltd.*, dated 15th December, 1956 for Rohtas Pipradih Siding.

Agreement (Supplementary) *between Dehri-Rohtas Light Railway Co. Ltd. and M/s. Rohtas Industries Ltd.*, dated 30th June 1954 for Nasriganj Private Siding.

MAIN PROVISIONS OF AGREEMENT AND LOCAL GOVERNMENT ORDER

(*i*) *Land*—The line runs partly on Government land in charge of the Public Works Department and partly along the district road to Akbarpur. The District Board of Shahabad have granted to the Dehri-Rohtas Tramway Company in perpetuity, subject to their right of purchasing the line [as in (*vi*) below], the free use of so much of the side of the District Board road between Dehri and Rohtas as is necessary, but not exceeding a width of eight feet leaving a clear roadway of fourteen feet intact for ordinary wheeled traffic, for the purpose of the line, and have promoted the acquisition of any additional land required outside the boundary of the said road at the cost of the Company.

That the Company shall in consideration of its user and occupation of the roads and lands belonging to the Board throughout the length of the existing railway track and upto the village of Purcha when the track is so far extended, pay to the Board as and by way of rent, a sum of Rs. 30,000 per annum in two equal instalments in the first week of January and July each year.

That the Company shall pay a further sum of Rs. 10,000 per annum to the Board in two equal instalments in the first week of January and July each year, in full quit and discharge for its liabilities for cess in respect of the railway under the Bengal Cess Act IX of 1880, irrespective of the profits or losses made by the Company on its railway business so long as the cess happens to be levied and the Board shall make arrangements to pay to the Cess Collector whatever cesses may be demanded from the Company in respect of the Railways by the Cess Collector.

That in the event of the liability for cess in any year exceeding Rs. 10,000 as aforesaid, the Board shall itself undertake to pay the excess and shall indemnify the Company in respect of all cesses in respect of the Railways.

(*ii*) *Aid by the Local Authority*—The District Board of Shahabad will recommend and apply to the Local Government to exempt the Dehri-Rohtas Tramway Company from the tax on account of road cess, or to exact only a nominal tax, for a period of twenty-one years from the date when the line is opened for traffic, with power of renewal.

(*iii*) *Distribution of profits*—The profits go to the Company.

(*iv*) *Rates and fares*—In addition to fixing certain maxima and minima for goods and coaching traffic the Central Government reserve to themselves full control over charges of all kinds.

(*v*) *Special obligations as to the conveyance of*—

(*a*) Mails, troops, police, high Government officials and Government stores— }
(*b*) Government bullion and coin, and the persons in charge thereof— } —*Nil.*

(*vi*) *Power of the Local Authority to determine agreement*—Upon the expiration of 21 years, from the date of the Local Government order authorising the construction of the line, or at the end of every seven years thereafter, the District Board of Shahabad have, by giving six months' previous notice the right of purchasing the line by paying to the Company the value calculated at twenty years, purchase of the average net annual profits of the Company during the four years preceding the transaction together with a bonus of 20 per cent. thereon.

(*vii*) *Power of the Company to surrender agreement*—Nil.

(*viii*) *Term of agreement [if not determined under (vi)]*—Not specified.

A—NON-GOVERNMENT RAILWAYS—contd.

5. DEHRI-ROHTAS LIGHT RAILWAY (NARROW GAUGE—0·762 METRE)—*concld.*

STATISTICS OF WORKING

Those for the periods prior to 1913-4 will be found in Appendix I to the Railway Administration Report for 1913-4.

Year	Route kilometrage open at end of each year	Total capital outlay including suspense, to end of each year *i.e.*, outlay on (*i*) lines open, and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8
	Kilometres	Rs.	Rs.	Rs.		Rs.	
1913-4	38·35	6,15,474	1,49,861	93,912	15·25	75	37·33
1914-5	38·35	6,26,528	1,90,728	1,30,900	20·89	94	31·35
1915-6	38·35	6,27,568	2,19,432	1,48,953	23·73	109	32·11
1916-7	38·35	6,88,158	2,31,709	1,58,246	22·99	116	31·70
1917-8	38·35	6,70,323	2,18,395	1,39,039	20·74	109	36·26
1918-9	38·35	7,39,877	2,23,787	86,894	11·74	111	61·17
1919-20	38·35	7,85,980	2,66,120	1,16,158	14·77	132	56·35
1920-1	38·35	8,68,789	2,78,341	1,23,043	14·16	139	55·79
1921-2	38·35	8,80,602	2,51,825	97,537	11·07	125	61·26
1922-3	38·35	8,86,187	3,16,925	1,38,127	15·58	157	56·41
1923-4	35·35	9,23,384	3,19,469	1,44,115	15·60	159	54·89
1924-5	35·35	10,17,154	3,10,354	1,19,297	11·72	154	61·56
1925-6	38·35	11,24,217	3,21,657	1,48,683	13·23	161	53·78
1926-7	38·35	11,92,592	3,27,593	1,51,161	12·68	164	53·85
1927-8	41·05	12,30,418	3,27,779	1,60,813	12·17	166	50·93
1928-9	41·05	12,73,010	2,96,251	1,41,581	11·22	139	52·22
1929-30	41·05	12,63,753	2,94,539	1,41,976	11·23	138	51·79
1930-31	41·05	12,64,191	2,32,680	84,281	6·67	109	63·77
1931-2	41·05	12,56,702	1,87,702	62,929	5·00	88	66·47
1932-3	41·05	12,47,779	1,61,451	49,386	3·96	76	69·41
1933-4	41·05	12,47,945	1,69,662	66,523	5·33	79	60·79
1934-5	41·35	12,49,949	2,31,822	1,02,955	8·24	109	55·59
1935-6	41·05	12,48,447	1,88,856	63,454	5·08	88	66·40
1936-7	41·05	12,45,541	1,64,629	23,669	1·90	77	85·62
1937-8	41·05	12,62,621	1,74,163	54,317	4·30	81	68·81
1938-9	41·05	12,75,327	2,43,123	86,944	6·82	114	64·23
1939-40	†41·05	*13,18,582	1,56,057	32,701	2·48	73	79·04
1940-1	†41·47	*13,21,660	1,41,235	4,619	0·34	65	96·72
1941-2	†41·47	*13,17,251	2,56,480	95,113	7·22	127	62·89
1942-3§	†41·47	‡13,76,080	2,63,923	1,45,523	10·57	131	44·84
1943-4	†41·47	§§13,90,046	3,63,429	1,48,980	10·71	181	59·00
1944-5	¶38·77	§§15,92,847	3,49,189	84,133	5·28	174	75·90
1945-6	38·77	(*a*) 23,04,860	3,18,364	77,069	3·34	158	75·82
1946-7	38·77	(*b*) 24,58,710	4,91,711	1,91,421	7·78	245	61·07
1947-8	38·77	(*c*) 55,47,474	6,52,759	2,90,519	11·40	324	55.49
1948-9	38·77	(*c*) 25,05,197	7,41,314	3,25,089	12·98	368	56·14
1949-50	38·77	33,14,636	9,42,682	3,86,982	11·67	468	58·95
1950-1	38·77	41,50,432	12,25,631	4,67,170	11·27	608	61·80
1951-2	38·77	58,92,848	20.40,513	10,72,999	18·24	1,012	47·21
1952-3	38·77	57,43,568	21,32,413	9,47,603	16·49	1,042	55·56
1953-4	38·77	58,53,087	20,60,479	9,92,818	16·96	1,022	51·82
1954-5	38·77	69,16,668	21,01,319	10,73,740	15·52	1,042	48·90
1955-6	38·77	74,25,954	22,29,796	11,11,163	14·96	1,106	50·16
1956-7	38·77	77,22,280	26,49,656	13,27,037	17·18	1,313	49·92
1957-8	38·77	82,60,556	27,72,895	10,74,398	13·00	1,375	61·25
1958-9	66·79	78,82,076	39,29,709	21,85,037	27·72	1,178@	44·39
1959-60	66·79	95,98,136	(*d*)53,91,756	22,54,879	24·07	1,267	48·72
1960-1	66·79	93,67,713	(*d*)43,97,971	30,44,723	31·72	1,553	43·52
1961-2	66·75	98,15,240	(*d*) 52,03,831	24,58,989	25·05	1,499	52·74
1962-3	66·75	1,02,47,355	(*d*) 54,16,913	23,59,317	23·02	1,560	56·44
1963-4	66·75	1,04,23,870	(*d*) 46,52,428	16,00,304	14·92	1,340	65·60

* Includes Rs. 1,76,771 being cost of Rohtas—Rohtas Fort extension since closed for public traffic.

† Inclusive of kilometrage relating to Rohtas—Rohtas Fort extension since closed for public traffic.

‡ Includes Rs. 1,66,996 being cost of date of Rohtas Fort extension since closed for public traffic.

§ Figures for this year are not susceptible of agreement with the corresponding figures appearing in statement No. 5 of Railway Board's Annual Administration Report—Volume II, as the latter publication contained unaudited figures.

¶ Excluding the kilometrage from Rohtas to Rohtas Fort not in operation now.

§§ Including Rs. 1,67,428 being capital expenditure of date of Rohtas Fort Extension since closed for public traffic, which is not now being operated and also the value of stores, coal, stores in transit and Tarachandi survey expenses

(*a*) Including Rs. 1,67,428 being expected expenditure of Rohtas to Rohtas Fort.

(*b*) „ „ 1,67,454 „ „ „ „ „ „ „ „ „

(*c*) „ „ 1,67,428 „ cost of Rohtas—Rohtas Fort extension since closed for public traffic.

(*d*) Including interest and dividend.

@ Rohtas to Pipradih section was opened on 16-4-1958 hence 50 weeks' earnings taken for this purpose on extended portion.

A—NON-GOVERNMENT RAILWAYS—*contd.*

6. FUTWAH-ISLAMPUR LIGHT RAILWAY (NARROW GAUGE—0·762 METRE)

Secretaries and Treasurers—MESSRS MARTIN BURN LTD., CALCUTTA

Date of registration of the Company—SEPTEMBER 1915

The construction of this line by the Futwah-Islampur Light Railway Company was authorised in Railway Board's telegram No. 2071-C/3216, dated 24th September 1915.

PROGRESS IN OPENING

Section of Railway 1	Date of opening 2	Kilometres 3	Total 4
Futwah to Islampur	24-1-1922	43·45	43·45

DETAILS OF CONSTRUCTION

Permanent way—The permanent way consists of 14·88 kilograms/metre (30 lbs./yard) flat-footed steel rails laid on sal sleepers, except that 29·76 kilograms/metre (60 lbs./yard) RBS steel rails are laid on sal sleepers for 6·05 kilometres and 24·89 kilograms/metre (50 lbs./yard) F.P. steel rails are laid on sal sleepers for 14·67 kilometres.

Ballast—The line is fully ballasted with stone and brick.

Fencing—The line is unfenced.

Curves—The sharpest curve has a radius of 125 metres.

Gradients—The grades are easy except at some bridge approaches where the gradient is 1 in 150.

AGREEMENT AND CONTRACT

Agreement, dated 31st July 1912, *between the District Board of Patna and Messrs Martin and Company on behalf of the Futwah-Islampur Light Railway Company*, as to the grant of a concession to the company of the right to construct a Light Railway over that portion of the road between Futwah and Hilsa which is within the jurisdiction of the Board.

Contract, dated 3rd September 1920, *between the Secretary of State and the Futwah-Islampur Light Railway Company* as to the construction, maintenance and working of the Futwah-Islampur Light Railway.

MAIN PROVISIONS OF AGREEMENT AND CONTRACT

(*i*) *Land*—Provided free by Government other than one side of the road between, Futwah and Hilsa, the free use of which has been granted by the District Board of Patna.

(*ii*) *Government aid*—If the net receipts of the Company shall not be sufficient to pay interest on the paid up capital at the rate of 3½ per cent. per annum, the Secretary of State will pay such a sum as shall together with the net receipts make up an amount equal to interest at the rate of 3½ per cent. per annum on the share capital of the Company for the time being paid up.

(*iii*) *Aid by the Local Authority*—The District Board of Patna will recommend to the Local Government to exempt the Company from the tax on account of road cess or to exact only a nominal tax for 21 years from the date of opening of the line, with power of renewal.

(*iv*) *Distribution of profits*—When the net receipts shall exceed the minimum amount sufficient to pay interest on the paid up share capital at the rate of 5 per cent. per annum, half of such excess shall belong to the Secretary of State and the other half be divided equally between the Company and the District Board of Patna.

(*v*) *Rates and fares*—Shall be such as may, from time to time, be sanctioned by the Secretary of State and the classification of goods shall be in conformity with that from time to time in force on State railways of a similar gauge, provided that in making charges to the public within the sanctioned maxima and minima the Company shall not calculate the same otherwise than in accordance with the rates authorised and shall make no rebate or other concession which will have the effect of bringing any rate actually paid below the minimum authorised.

(*vi*) *Special obligations as to the conveyance of* (*a*) *Mails, troops, police, high Government officials and Government stores* (*b*) *Government bullion and coin and persons in charge thereof*—All services in connection with the Post Office, Army, Police and other Departments of Government shall be performed in the same manner and subject to the same regulations and conditions as are for the time being in force on State Railways of a similar gauge.

(*vii*) *Power of the Government to determine contract*—The Government may, by giving 12 months' previous notice of purchase determine the contract either on 31st March 1948, or on 31st March in the last year of any subsequent period of 10 years.

The option to purchase the line was neither exercised in 1948 nor in 1958 by the Government of India. Next option will fall due on 31st March 1968.

The Government may also, by giving 'notice of special purchase,' determine the contract at any time in the following cases :—

(*a*) When it is considered desirable to alter the gauge of the railway;
(*b*) When it is considered desirable to convert the railway into a line of through communication and
(*c*) When it is considered desirable to extend the railway and the Company does not provide funds for such extension.

If the contract be determined by 'notice of purchase' the Secretary of State shall pay to the Company 25 times the amount of the average of the yearly net earnings, during the last preceding 3 years provided that the total amount so payable shall not in any case exceed by more than 20 per cent or be less than the total capital expenditure of the Company.

If the contract be determined by 'notice of special purchase,' the Secretary of State shall pay to the Company 25 times the average of the yearly net earnings during the last preceding 3 years or 115 per cent of the total capital expenditure. whichever may be the greater. But if such purchase shall occur within less than 3 years from the opening of the extension referred to in (c) the price shall be 115 per cent. of the total capital expenditure.

(*viii*) *Power of the Company to surrender contract*—Nil

(*ix*) *Term of Contract* [*if not determined under* (*vii*)]—Not specified.

A—NON-GOVERNMENT RAILWAYS—contd.

6. FUTWAH-ISLAMPUR LIGHT RAILWAY (NARROW GAUGE—0·762 METRE)—*concld.*

STATISTICS OF WORKING

Year 1	Route-kilometrage open at end of each year 2	Total capital outlay including suspense, to end of each year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction 3	Gross earnings 4	Net earnings 5	Percentage of net earnings on total capital outlay given in column (3) 6	Subsidy from (+) or share of surplus profit to (—) the Government 7	Total income 8	Percentage of total income on total capital outlay given in column (3) 9	Earnings per route kilometre per week 10	Proportion of expenses to earnings 11
	Kilometres	Rs.	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.	
1921-2 .	43·45	16,13,466	18,037	4,916	0·30	..	4,916	0·30	42	72·74
1922-3 .	43·45	17,40,431	1,16,715	32,657	1·88	+39,322	71,979	4·13	52	72·06
1923-4 .	43·45	17,96,320	1,40,392	63,516	3·53	+14,370	77,886	4·33	62	54·75
1924-5 .	43·45	18,52,573	1,72,503	98,389	5·31	—88	98,301	5·30	76	42·96
1925-6 .	43·45	18,90,562	1,89,246	1,06,914	5·65	—3,330	1,03,584	5·47	83	43·50
1926-7 .	43·45	19,21,364	1,86,875	97,735	6·08	..	97,735	5·08	83	47·71
1927-8 .	43·45	19,46,137	1,76,657	84,310	4·33	..	84,310	4·33	78	52·27
1928-9 .	43·45	19,47,853	1,28,939	32,299	1·66	+53,525	85,824	4·41	57	74·95
1929-30	43·45	19,55,972	1,56,736	60,314	3·08	+25,793	86,107	4·40	69	61·52
1930-1 .	43·45	19,51,288	1,59,525	46,007	2·36	+40,206	86,213	4·41	70	71·16
1931-2 .	43·45	19,46,230	1,35,791	29,244	2·80	+57,672	86,916	4·47	60	78·46
1932-3 .	43·45	19,49,255	1,12,507	26,075	1·34	+61,507	87,582	4·49	50	76·82
1933-4 .	43·45	19,47,937	1,17,688	29,031	1·49	+54,338	83,369	4·28	52	75·34
1934-5 .	43·45	19,43,615	1,23,494	30,747	1·60	+48,663	79,410	4·08	55	75·10
1935-6 .	43·45	19,50,945	1,09,037	10,043	0·51	+69,050	79,093	4·05	48	90·80
1936-7 .	43·45	19,60,279	89,663	—15,495	—0·77	+96,782	81,287	4·14	40	117·30
1937-8 .	43·45	19,62,520	1,12,202	3,048	0·15	+77,882	80,930	4·12	50	97·32
1938-9 .	43·45	19,67,080	1,21,104	24,815	1·26	+55,400	80,215	4·07	53	79·52
1939-40	43·45	19,61,020	1,29,684	17,906	0·91	+62,020	79,926	4·07	57	86·19
1940-1 .	43·45	19,78,462	1,16,385	4,306	0·21	+75,802	80,108	4·04	52	96·30
1941-2 .	43·45	19,34,409	1,18,795	9,641	0·49	+71,099	80,740	4·13	53	91·91
1942-3 .	43·45	19,34,855	1,12,488	—23,399	—1·20	+1,03,426	80,027	4·13	50	120·71
1943-4 .	43·45	19,17,842	1,96,987	65,177	3·39	+14,091	79,268	4·13	87	66·93
1944-5 .	43·45	19,19,293	2,41,353	91,572	4·77	..	91,572	4·77	107	62·08
1945-6 .	43·45	19,21,013	2,75,507	93,836	4·88	..	93,836	4·88	122	65·95
1946-7 .	43·45	19,30,045	2,70,353	14,994	0·78	+62,196	77,190	4·00	120	94·45
1947-8 .	43·45	19,30,660	3,16,759	34,146	1·77	+43,119	77,265	4·00	140	89·20
1948-9 .	43·45	19,24,283	3,83,973	49,731	2·58	+27,325	77,056	4·00	170	87·05
1949-50	43·45	19,75,911	4,27,631	31,127	1·57	+46,116	77,243	3·91	190	92·73
1950-1 .	43·45	20,37,465	4,13,593	—1,14,362	—5·61	+1,92,771	78,409	3·85	183	127·65
1941-2 .	43·45	20,38,119	4,64,460	24,424	1·20	+56,718	81,142	3·98	206	94·72
1952-3 .	43·45	20,42,095	4,13,917	1,53,852	—7·54	+2,35,169	81,317	3·98	183	137·18
1953-4 .	43·45	20,28,728	4,57,117	—1,35,092	—6·66	+2,20,792	85,700	4·22	203	129·55
1954-5 .	43·45	20,26,185	5,29,093	—1,02,224	—5·04	+1,88,305	86,081	4·25	234	119·31
1955-6 .	43·45	20,18,088	5,34,432	—1,71,751	—8·50	+ 2,57,650	85,899	4·30	237	132·20
1956-7 .	43·45	20,18,033	6,01,303	—28,290	1·40	+ 1,13,187	84,897	4·20	266	104·70
1957-8 .	43·45	20,32,287	5,94,637	—1,04,943	—5·16	+ 1,90,689	85,746	4·22	263	117·64
1958-9 .	43·45	20,58,413	6,27,287	11,807	0·57	+75,770	87,577	4·25	278	98·11
1959-60	43·45	20,30,235	7,69,571	37,217	1·83	+46,844	84,061	4·14	341	95·17
1960-1 .	43·45	20,16,130	8,22,276	—1,099	0·05	+89,485	88,386	4·38	364	100·13
1961-2 .	43·45	20,27,443	8,51,316	59,013	5·15	..	59,013	2·91	377	87·72
1962-3 .	43·45	20,98,668	8,86,373	26,271	1·25	+65,179	91,450	4·35	392	97·03
1963-4 .	43·45	20,90,161	9,00,523	81,018	3·87	—811	80,207	3·83	399	91·00

A—NON-GOVERNMENT RAILWAYS—*contd.*

7. HOWRAH-AMTA LIGHT RAILWAY (NARROW GAUGE—0·610 METRE)

Secretaries of Treasurers—MESSRS MARTIN BURN LTD., CALCUTTA

Date of registration of the Company—2nd May 1895.

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4
Main line—			
Howrah Maidan to Dasnagar	1-2-1948	4·00	
Dasnagar to Dumjur	1-7-1897	10·81	
Dumjur to Bargachia	2-10-1897	9·45	
Bargachia to Maju	4-5-1898	8·85	
Maju to Amta	1-6-1898	10·65	
			43·76
Champadanga branch—			
Bargachia to Jagatbalabpur	2-10-1897	2·41	
Jagatbalabpur to Autpur	1-6-1904	13·68	
Autpur to Champadanga	24-8-1908	10·75	
			26·84
TOTAL	..	..	70·60

DETAILS OF CONSTRUCTION

Permanent way—The permanent way consists of flat footed steel rails on sal sleepers, 29·26 kilograms/metre (60 lbs./yard) R.B.S. rails for 8·0 kilometres, 24·89 kilograms/metre (50 lbs./yard) for 7·92 kilometres, 20·46 kilograms/metres (41½ lbs./yard) for 45·84 kilometres and 17·36 kilograms/metre (35 lbs./yard) for 8·84 kilometres.

Ballast—The line is ballasted throughout.

Fencing—The line is unfenced.

Curves—The sharpest curve, sanctioned especially for the town of Howrah, has a radius of 44 metres.

Gradients—The line is practically level throughout, except at the approach of a bridge which has gradient of 1 in 200 for a length of 8 chains.

AGREEMENTS AND LOCAL GOVERNMENT ORDERS

Agreement, dated 12th June 1889, *between the District Board of Howrah and Messrs Walsh, Lovett and Company on behalf of the Bengal District Road Tramways Company,* as to the grant of a concession to the Company of the right to construct and work a tramway over a portion of the road within the jurisdiction of the Board.

Agreement, dated 27th September 1889, *between the Municipal Commissioners of Howrah and Messrs Walsh, Lovett and Company on behalf of the Bengal District Road Tramway Company,* as to the grant of a concession to the Tramways Company of the right to construct and work a tramway over a portion of the road within the jurisdiction of the Commissioners.

Bengal District Road Tramway Company order published under the Bengal Government, Public Works Department Notification No. 111, dated 26th March 1895, authorising the construction of a tramway from Howrah to Amta.

Agreement, dated 3rd May 1897, *between the District Board of Howrah and the Bengal District Road Tramways Company* (*Howrah-Amta*), in amendment of the agreement of 12th June 1889.

Agreement, dated 16th August 1901 (supplemental to the agreements of 1889 and 1897), *between the District Board of Howrah and the Howrah-Amta Light Railway Company,* as to the construction and working of an extension from Jagatbalabpur to Champadanga.

Howrah-Amta Extension order published under the Bengal Government, Railway Department Notification No. 75-R, dated 7th April 1902, authorising the construction of the extension from Jagatbalabpur to Champadanga.

MAIN PROVISIONS OF AGREEMENT AND LOCAL GOVERNMENT ORDERS

(*i*) *Land*—Provided at the cost of Company, other than one side of portions of the road between Howrah and Amta the free use of which is authorised for the purpose of laying the line only.

(*ii*) *Aid by the Local Authorities*—The District Board of Howrah either exempt the Company from the tax on account of road cess, or exact only a nominal tax for a period of 21 years, with power of renewal. The Municipal Commissioners of Howrah allow the Company free use of so much of the municipal roads as is necessary for the purpose of laying the line, for a period of 20 years from 27 March 1895; and thereafter levy a track rent of Rs. 2,000 per mile per annum (Rs. 1,242·74 per kilometre per annum).

The District Board also pay to the Company, by way of interest on the capital expended, such sum of money as may be required to make the net profits of the Company equivalent to a dividend at the rate of 4 per cent per annum, provided that the Board is not involved on this account in a greater liability than Rs. 1,100 per annum per mile (Rs. 683·51 per annum per kilometre) constructed and opened with a maximum of Rs. 28,000 per annum.

(*iii*) *Distribution of profits*—Surplus profits in excess of 4 per cent after setting aside such sums as the Directors may decide, upon the capital for the time being of the Company are divisible in equal proportions between the District Board of Howrah and the Company.

(*iv*) *Rates and Fares*—In addition to fixing certain maxima and minima for goods and coaching traffic the Central Government reserve to themselves full control over charges of all kinds.

A—NON-GOVERNMENT RAILWAYS—*contd.*

7. HOWRAH-AMTA LIGHT RAILWAY (NARROW GAUGE—0·610 METRE)—*concld.*

MAIN PROVISIONS OF AGREEMENTS AND LOCAL GOVERNMENT ORDERS—*concld.*

(*v*) *Special obligations as to the conveyance of*—
(*a*) Mails, troops, police, high Government officials and Government stores— } *Nil*
(*b*) Government bullion and coin, and the persons in charge thereof— }

(*vi*) *Power of the Local Authority to determine agreement*—Upon the expiration of 21 years from the date of the Local Government order authorising the construction of the line, or at the end of every 7 years thereafter, the District Board of Howrah, in conjunction with the District Board of Hooghly and the Municipality of Howrah, have, by giving 6 months' notice, the right of purchasing the line by paying to the Company its value as a dividend-earning investment, together with a bonus of 20 per cent thereon.

N.B.—The local authority did not exercise their right of purchasing the line so far. The next option will fall due in 1965.

(*vii*) *Power of the Company to surrender agreement*—Nil.

(*viii*) *Term of agreement* [*if not determined under* (*vi*)]—None specified.

STATISTICS OF WORKING

Those for the periods prior to 1913-4 will be found in Appendix 38 to the Railway Administration Report for 1907 and in Appendix 1 to the Report for 1913-4.

Year	Route kilometrage open at end of each year	Total capital outlay including suspense to end of each year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Amount credited to Renewal Reserve Account	Subsidy from (+) or share of surplus profits to (—) the District Board	Total income	Percentage of total income on total capital outlay given in column (3)	Earnings per route kilometres per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8	9	10	11	12
	Kilometres	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.		Rs.	
1913-4 .	70·60	25,61,026	5,94,343	2,68,927	10·50	65,000	—47,009	1,56,918	6·20	162	54·70
1914-5 .	70·60	26,70,739	6,13,739	2,38,783	8·94	20,000	—51,593	1,67,190	6·22	167	61·05
1915-6 .	70·60	26,87,496	6,17,537	2,60,185	9·68	22,500	—60,144	1,77,541	6·67	168	57·87
1916-7 .	70·60	26,43,718	6,06,612	2,68,431	10·15	20,000	—63,055	1,85,376	7·01	165	55·74
1917-8 .	70·60	26,52,602	6,02,385	2,76,099	10·40	33,000	—62,863	1,80,236	6·79	164	54·17
1918-9 .	70·60	27,02,431	6,54,881	2,87,955	10·65	50,000	—59,722	1,78,233	6·59	178	56·02
1919-20 .	70·60	26,94,595	7,17,767	2,67,749	9·93	30,000	—62,267	1,75,482	6·51	195	62·69
1920-1 .	70·70	27,61,373	8,54,740	3,98,963	14·44	1,00,000	—86,825	2,12,138	7·68	237	53·32
1921-2 .	52·90	28,69,108	8,65,026	3,38,809	11·81	1,00,000	—61,709	1,77,100	6·17	235	60·85
1922-3 .	70·60	27,76,196	9,65,229	3,79,226	13·66	1,00,000	—88,375	1,90,851	6·87	263	60·70
1923-4 .	70·60	27,27,168	10,13,438	4,54,798	16·67	1,35,000	—1,02,820	2,16,978	7·95	276	55·12
1924-5 .	70·60	27,96,446	10,41,998	4,89,862	17·51	1,70,000	—1,09,366	2,10,496	7·52	284	52·98
1925-6 .	70·60	29,09,180	10,74,119	5,50,394	18·97	1,70,000	—1,28,384	2,52,010	8·68	292	48·76
1926-7 .	70·60	29,74,663	10,37,977	4,99,960	16·87	1,25,000	—1,29,236	2,83,781	9·53	283	51·83
1927-8 .	70·60	30,59,586	10,69,252	3,70,235	12·10	1,60,000	—1,69,256	2,53,979	8·27	291	65·37
1928-9 .	70·60	32,25,578	10,50,807	3,39,807	10·53	1,25,000	—86,102	2,53,705	7·86	286	67·66
1929-30 .	70·60	32,34,570	11,27,418	3,79,203	11·72	1,60,000	—1,25,855	2,53,348	7·83	307	66·37
1930-1 .	70·60	32,67,440	10,48,601	2,79,244	8·54	1,60,000	—57,548	2,21,696	6·78	286	73·37
1931-2 .	70·60	31,84,685	9,89,071	2,30,003	7·22	1,95,000	—34,360	1,95,643	6·14	270	76·75
1932-3 .	70·60	31,12,508	9,45,303	2,72,561	8·76	1,55,000	—57,725	2,14,836	6·90	257	71·17
1933-4 .	70·60	39,98,104	9,07,668	2,64,050	8·54	1,55,000	—63,540	2,00,510	6·46	247	70·88
1934-5 .	70·60	30,81,162	9,21,543	2,95,949	9·50	1,55,000	—75,795	2,20,154	7·14	251	67·80
1935-6 .	70·60	31,87,346	8,77,782	2,44,641	6·67	1,55,000	—74,604	1,70,037	5·33	239	72·56
1936-7 .	70 60	31,75,200	8,34,141	2,39,130	7·53	1,28,000	—62,546	1,76,584	5·56	227	71·30
1937-8 .	70·60	31,64,261	8,70,432	2,64,945	8·37	1,28,000	—74,937	1,90,008	6·00	237	69·56
1938-9 .	70·60	31,47,859	8,89,937	2,45,679	7·80	1,28,000	—55,114	1,90,565	6·05	242	72·40
1939-40 .	70·60	31,79,756	9,38,042	1,98,460	6·24	1,28,000	—28,689	1,69,771	5·33	229	76·35
1940-1 .	70·60	32,93,509	8,90,305	2,62,626	7·97	1,28,000	—67,095	1,95,531	6·24	242	70·50
1941-2 .	70·60	37,48,488	10,31,660	3,53,414	9·42	1,28,000	—51,809	3,01,605	8·04	281	65·74
1942-3 .	70·60	38,10,905	12,33,100	5,04,549	13·23	1,23,500	—89,176	4,15,373	10·89	336	59·08
1943-4 .	70·60	39,83,029	13,48,704	4,53,649	11·38	1,25,000	—60,111	3,93,538	9·88	367	66·36
1944-5 .	70·60	43,28,569	14,69,714	4,49,584	10·38	1,25,000	—78,821	3,70,763	8·56	398	69·22
1945-6 .	70·60	46,33,377	15,71,933	4,91,340	10·60	1,25,000	—60,076	4,31,264	8·30	428	68·74
1946-7 .	70·60	46,65,735	13,15,094	2,17,268	4·06	1,25,000	—4,454	2,12,814	4·56	358	83·48
1947-8 .	70·60	50,37,207	17,35,687	2,94,807	5·85	1,25,000	—31,921	2,62,886	5·22	473	83·01
1948-9 .	70·60	54,41,290	23,99,581	5,40,617	9·93	1,25,000	—1,35,550	4,05,067	7·44	654	77·47
1949-50 .	70·60	58,09,603	23,83,010	1,92,369	3·31	1,25,000	—55,038	1,37,331	2·36	649	91·92
1950-1 .	70·60	56,58,969	27,18,209	5,67,395	10·03	1,25,000	1,07,248	4,60,147	8·13	741	79·13
1951-2 .	70·60	56,91,657	28,83,757	6,46,997	11·37	1,25,000	—1,16,648	5,30,349	9·31	771	77·56
1952-3	70·60	57,67,251	28,64,195	4,03,023	6·99	1,25,000	—1,06,981	2,96,042	5·13	780	85·93
1953-4 .	70·60	57,29,477	28,03,897	2,21,515	3·87	1,25,000	—650	2,20,865	3·85	764	92·10
1954-5 .	70·60	60,77,175	29,22,219	2,75,140	4·52	1,25,000	—52,722	2,22,418	3·66	796	90·50
1955-6 .	70·60	62,93,125	28,68,600	2,41,929	3·90	1,25,000	—21,619	2,20,310	3·50	781	91·60
1956-7 .	70·60	57,92,625	29,76,779	3,07,811	5·31	1,25,000	—42,704	2,65,107	4·57	814	89·66
1957-8 .	70·60	57,57,986	30,31,693	3,49,726	6·07	1,25,000	—20,498	3,29,228	5·71	826	88.46
1958-9 .	70·31	56,21,473	30,14,541	2,00,560	3·56	1,25,000	—7,895	1,92,665	3·43	825	93·34
1959-60 .	70·31	55,22,443	29,68,169	2,36,573	4·28	1,25,000	..	2,36,573	4·28	812	92·02
1960-1 .	70·31	54,53,201	31,08,560	2,71,553	4·98	1,25,000	—38,586	2,32,967	4·27	850	91·26
1961-2 .	70·31	54,99,178	29,77,544	1,70,485	3·10	1,25,000	—19,898	1,50,587	2·73	814	94·27
1962-3 .	70·31	54,80,717	29,89,084	1,82,923	3·34	1,25,000	—24,860	1,58,063	2·88	818	93·88
1963-4 .	70·31	54,21,566	31,36,331	2,07,749	3·83	1,25,000	—754	2,06,995	3·81	858	93·38

A—NON-GOVERNMENT RAILWAYS—contd.

8. HOWRAH SHEAKHALA LIGHT RAILWAY (NARROW GAUGE—0·610 METRE)

Managing Agents—MESSRS MARTIN BURN LTD., CALCUTTA

Date of registration of the Company—19th JUNE 1895

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4
Main line—			
Dasnagar kilometre 3·2 to kilometre 6·0	1-2-1948	2·80	
Kilometre 6·0 to Chanditala	2-8-1897	10·44	
Chanditala to Kistrampur	10-9-1897	6·03	
Kistrampur to Sheakhala	7-11-1897	7·64	
			26·91
Janai Branch—			
Chanditala to Janai	5-5-1898	3·81	3·81
TOTAL	..	..	30·72

DETAILS OF CONSTRUCTION

Permanent-way—The permanent-way consists of flat-footed steel rails, laid on sal sleepers, 29·76 kilograms/metre (60 lbs./yard) RBS rails for 0·88 kilometre, 20·46 kilograms/metre (44½ lbs./yard) for 9·52 kilometres and 17·36 kilograms/metre (35 lbs./yard) for 16·51 kilometres.

Ballast—The line is ballasted throughout.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 44 metres radius at Howrah town.

Gradients—The line is practically level throughout.

AGREEMENTS AND LOCAL GOVERNMENT ORDERS

Agreement, dated 12th June 1889, *between the District Board of Howrah and Messrs Walsh, Lovett and Company of Calcutta (the Promoters), for and on behalf of the Bengal District Road Tramways Company*;

Agreement, dated 16th July 1889 *between the District Board of Hooghly and Messrs Walsh, Lovett and Company of Calcutta (the Promoters), for and on behalf of the Bengal District Road Tramways Company*;

Agreement, dated 27th September 1889, *between the Municipal Commissioners of Howrah and Messrs Walsh, Lovett and Company of Calcutta (the Promoters), for and on behalf of the Bengal District Road Tramways Company*;

} as to the grant of a concession of the right to construct, maintain and work the line from Howrah to Sheakhala.

The Bengal District Road Tramways Company order published under the Bengal Government, Public Works Department Notification No. 112, dated 26th March 1895, authorising the construction of the line from Howrah to Sheakhala.

Agreement, dated 10th January 1898, *between the District Board of Hooghly and the Bengal District Road Tramways Company (Howrah-Sheakhala)*, providing for an increase in the amount of subsidy guaranteed to be paid by the District Board.

MAIN PROVISIONS OF AGREEMENT AND LOCAL GOVERNMENT ORDERS

(*i*) *Land*—Provided at the cost of the Company, other than one side of portions of the road between Howrah and Sheakhala, the free use of which is authorised for the purpose of laying the line.

(*ii*) *Aid by the local authorities*—The District Board of Howrah, for 21 years, with power of renewal exempt the company from the tax on account of road cess, or exact only a nominal tax; and the District Board of Hooghly guarantee to make up the net profit of the Company equivalent to a dividend of 4 per cent per annum on the capital actually paid up and expended, subject to a maximum of Rs. 950 per annum per mile (Rs. 590·30 per annum per kilometre of the line constructed and open. The Municipal Commissioners of Howrah allow to the Company free use of so much of the Municipal roads as is necessary for the purpose of laying the line, for a period of 30 years from 27th March 1895 and thereafter levy a track rent of Rs. 2,000 per mile per annum (Rs. 1,242·74 per annum per kilometre).

(*iii*) *Distribution of profits*—Surplus profits in excess of 4 per cent, after setting aside such sums as the Directors may decide upon the capital for the time being of the Company are divisible between the District Board of Hooghly and the Company in proportion of ⅓rd to the former and ⅔rds to the latter.

(*iv*) *Rates and Fares*—In addition to fixing certain maxima and minima for goods and coaching traffic the Central Government reserve to themselves full control over charges of all kinds.

(*v*) *Special obligations as to the conveyance of*—

(*a*) Mails, troops, police, high Government officials and Government stores— }
(*b*) Government bullion and coin, and the persons in charge thereof— } Not specified.

(*vi*) *Power of the Local authority to determine agreement*—The District Board of Howrah or that of Hooghly, each in conjunction with the other and with the Municipal Commissioners of Howrah, have the right of determining the agreement and purchasing the line after 21 years from the date of the Local Government order authorising its construction or at the end

A—NON-GOVERNMENT RAILWAYS—contd.

8. HOWRAH-SHEAKHALA LIGHT RAILWAY (NARROW GAUGE—0·610 METRE)—*concld.*

MAIN PROVISIONS OF AGREEMENTS AND LOCAL GOVERNMENT ORDERS—*concld.*

of every 7 years thereafter. If purchased by the District Board of Howrah the price will be equal to the value of the whole line, *plus* a bonus of 20 per cent thereon; if purchased by the District Board of Hooghly the price will be the value of the whole line, *plus* a bonus of 15 per cent thereon.

N.B.—The Local Authority did not exercise their right of purchasing the line so far. The next option will fall due in 1965.

(*vii*) *Power of the Company to surrender agreement*—Nil.

(*viii*) *Term of agreement* [*if not determined under* (*vi*)]—None specified.

STATISTICS OF WORKING

Those for the periods prior to 1913-4 will be found in Appendix 38 to the Railway Administration Report for 1907 and in Appendix 1 to the Report for 1913-4.

Year 1	Route-kilo-metrage open at end of each year 2	Total capital outlay, including suspense, to end of each year, *i.e.* outlay on *i*) lines open and (*ii*) lines partly or wholly under construction 3	Gross earnings 4	Net earnings 5	Percentage of net earnings on total capital outlay given in column(3) 6	Amount credited to Renewal Reserve Account 7	Subsidy from (+) or share of surplus profits to (—) the District Board 8	Total income 9	Percentage of total income on total capital outlay given in column (3) 10	Earnings per route kilometre per week 11	Proportion of expenses to earnings 12
	kilometres	Rs.	Rs.	Rs.		Rs.	Rs.	Rs.		Rs.	
1913-4	31·78	7,18,108	1,57,837	69,653	9·69	23,000	—6,282	40,371	5·62	96	55·87
1914-5	31·78	8,26,846	1,56,032	70,546	8·53	20,000	—7,231	43,315	5·23	94	54·78
1915-6	31·78	7,70,777	1,62,490	62,125	8·06	10,000	—8,712	43,413	5·63	99	61·76
1916-7	31·78	7,63,657	1,61,042	65,167	8·53	8,000	—9 696	47,471	6·22	98	59·58
1017-8	31·78	7,63,974	1,61,947	65,380	8·55	8,000	—9,815	47,565	6·22	98	59·62
1918-9	31·78	7,61,892	1,75,335	79,897	10·48	21,000	—9,694	49,203	6·46	106	54·43
1919-20	31·78	7,64,184	1,71,991	65,597	8·58	20,000	—6,453	39,144	5·12	104	61·86
1920-1	31·78	7,84,419	1,76,437	69,746	8·89	14,000	—9,911	45,835	5·84	111	60·46
1021-2	31·78	8,16,954	1,87,602	75,477	9·23	17,000	—9,662	48,815	5·97	113	59·76
1922-3	31·78	8,23,958	2,15,507	71,774	8·71	25,000	—6,633	40,141	4·87	130	66·69
1923-4	31·78	7,88,116	2,23,244	1,02,957	13·06	40,000	—12,279	50,678	6·43	135	53·88
1924-5	31·78	7,87,327	2,22,620	1,01,576	12·90	50,000	—9,660	41,916	5·32	135	54·37
1925-6	31·78	8,09,147	2,36,964	1,13,055	13·97	50,000	—11,749	51,306	6·34	143	52·29
1926-7	31·78	8,19,865	2,25,397	98,092	11·96	30,000	—12,260	55,832	6·81	136	56·48
1927-8	31·78	8,24,229	2,24,567	71,468	8·67	20,000	—11,671	59,797	7·25	135	68·17
1928-9	31·78	8,24,786	2,28,751	66,744	8·08	23,000	—9,568	57,176	6·93	139	70·82
1929-30	31·78	8,34,737	2,33,390	65,111	7·80	20,000	—9,097	56,014	6·70	141	72·09
1930-1	31·78	8,38,408	2,43,775	51,648	6·15	40,000	—4,961	46,687	5·56	148	78·81
1931-2	31·78	8,54,924	2,07,263	37,711	4·41	26,000	—257	37,454	4·38	125	81·81
1932-3	31·78	8,36,174	1,94,548	26,437	3·16	28,000	Nil	26,437	3·16	117	86·41
1933-4	31·78	8,29,369	1,79,718	25,056	3·04	25,000	—83	24,973	3·01	109	86·03
1934-5	31·78	8,26,661	1,68,785	22,606	2·70	20,000	Nil	22,606	2·70	102	86·60
1935-6	31·78	8,56,062	1,95,366	36,516	4·26	27,000	—4,138	32,378	3·78	118	81·31
1936-7	31·78	8,63,219	1,94,089	35,370	4·10	30,000	—1,779	33,591	3·89	117	81·80
1937-8	31·78	8,55,258	1,89,606	30,416	3·55	25,000	—34	30,382	3·55	115	83·96
1938-9	31·78	8,55,258	1,88,516	29,938	3·49	25,000	Nil	29,938	3·50	114	84·08
1939-40	31·78	8,63,656	1,85,120	33,722	3·90	17,000	Nil	33,722	3·90	112	81·79
1940-1	31·78	9,28,142	1,97,201	34,303	3·69	26,000	—75	34,228	3·68	119	82·60
1941-2	31·78	9,22,029	2,23,864	50,699	5·49	30,000	—3,562	47,137	5·11	135	77·34
1942-3	31·78	9,22,208	2,85,939	1,02,460	11·11	26,000	—4,216	98,244	10·65	173	64·14
1943-4	31·78	9,81,730	3,29,815	96,293	9·80	20,000	—2,875	93,418	9·51	199	70·80
1944-5	31·78	9,84,352	3,69,704	1,29,592	13·16	30,000	—1,872	1,27,720	12·97	224	64·94
1945-6	31·78	10,57,096	3,81,990	1,26,283	11·94	30,000	—6,841	1,19,442	11·30	231	66·93
1946-7	31·78	10,53,265	3,46,530	58,692	5·57	18,000	Nil	58,692	5·57	209	83·06
1947-8	31·78	10,53,242	3,46,663	10,029	0·95	5,000	—5,000	5,029	0·48	210	97·11
1948-9	31·78	10,38,124	5,24,500	72,031	6·94	30,000	—10,543	61,488	5·92	318	86·27
1949-50	31·78	11,91,728	5,09,649	—7,879	—0·66	Nil	Nil	—7,879	—0·66	308	101·55
1950-1	31·78	12,35,671	6,62,401	1,28,547	10·40	40,000	—13,747	1,14,800	9·29	401	80·60
1951-2	31·78	13,01,748	6,42,074	1,06,546	8·19	30,000	—2,390	1,04,156	8·00	388	83·40
1952-3	31·78	13,54,023	6,13,138	20,521	1·51	10,000	—522	19,999	1·48	371	96·66
1953-4	31·78	13,55,440	6,76,151	62,497	4·61	25,000	—405	62,092	4·58	409	90·75
1954-5	31·78	13,78,138	8,70,908	1,85,198	13·43	25,000	+21,142	206,340	14·97	527	78·73
1955-6	31·78	13,82,825	7,19,051	39,471	2·80	10,179	—2,061	37,410	2·90	435	94·60
1956-7	27·16	13,70,521	7,12,696	85,544	6·24	15,000	—2,593	82,951	6·05	505	88·00
1957-8	27·16	13,70,521	7,48,144	1,05,043	7·66	12,500	—3,860	1,01,183	7·38	530	85·96
1958-9	27·16	13,70,521	7,60,579	78,431	5·72	14,000	—128	78,303	5·71	539	89·69
1959-60	27·16	13,70,521	7,81,377	98,376	7·18	30,000	—3,179	95,197	6·94	553	87·40
1960-1	27·16	13,66,352	7,82,152	64,263	4·71	30,878	—2,582	61,681	4·51	554	91·78
1961-2	27·16	13,66,352	8,30,450	62,731	4·60	28,423	—1,586	61,145	4·47	588	92·44
1962-3	27·16	13,66,352	8,98,835	90,311	6·61	16,241	—6,113	84,198	6·16	636	89·95
1963-4	27·16	13,64,168	9,35,120	85,845	6·29	52,000	—2,330	83,515	6·12	662	90·82

A—NON-GOVERNMENT RAILWAYS —contd.

9. SHAHDARA (DELHI)-SAHARANPUR LIGHT RAILWAY (NARROW GAUGE—0·762 METRE

Secretaries and Treasurers—MESSRS MARTIN BURN LTD. CALCUTTA

Date of registration of the Company—28th NOVEMBER 1905

PROGRESS IN OPENING

Sections of Railway 1	Date of opening 2	Kilometres 3	Total 4
Shahdara to Shamli	7-5-1907	148·86	
Shamli to Saharanpur	15-10-1907		
TOTAL	..	..	148·86

DETAILS OF CONSTRUCTION

Permanent way—The permanent way consists of 29·76 kilograms/metre (60 lbs/yard) RBS flat-footed steel rails laid on sal sleepers.

Ballast—The line is ballasted with stone ballast.

Fencing—The line is partially fenced.

Curves—The sharpest curve is of 582 metre radius.

Gradients—The ruling gradient is 1 in 500 with some short lengths of 1 in 333.

LOCAL GOVERNMENT ORDER AND AGREEMENT

The Shahdara-Saharanpur Tramway Company order, published under the Government of the United Provinces of Agra and Oudh, Public Works Department, Railway Branch, Notification No. 339-187-R., dated 18th April 1904;

Agreement, dated 11th October 1905, *between the Government of the United Provinces of Agra and Oudh and Messrs Martin and Company of Calcutta (called " the Promoters "), for and on behalf of the Shahdara (Delhi)-Saharanpur Light Railway Company*, published under the Government of the United Provinces of Agra and Oudh, Public Works Department, Railway Branch, Notification No. 1363-R.-187, dated 22nd November 1905;

} as to the construction maintenance and working of the line from Shahdara to Saharanpur.

MAIN PROVISIONS OF LOCAL GOVERNMENT ORDER AND AGREEMENT

(i) *Land and*
(ii) *Government aid*— } The Local Government provide free of charge for the purposes of the railway sufficient land for a single 5′ 6″ gauge (1·676 metre gauge) line, together with land for all conveniences and works approved under clause 8 of the agreement. In addition to this the Company are authorised to use for the purpose of the railway, but not for the purpose of any building or erection connected therewith, portions not exceeding six feet (1·83 metre) in width of the local road passing between Shahdara and Saharanpur.

(iii) *Distribution of profits*—Surplus profits in any year in excess of 4 per cent. upon the paid-up capital of the Company shall be divided equally between the Government and the Company; payments on account of, but subject to, adjustment being made at close of first half-year.

(iv) *Rates and fares*—In addition to fixing certain maxima and minima for goods and coaching traffic the Central Government reserves to themselves full control over charges of all kinds.

(v) *Special obligations as to the conveyance of*—

(a) Mails, troops, police, high Government officials and Government stores.
(b) Government bullion and coin, and the persons in charge thereof. } *Nil*

(vi) *Power of the Government to determine agreement*—Upon the expiration of 21 years after the date of opening, or 23 years from the date of the Local Government order sanctioning the construction of the line, whichever is earlier, or at the end of every seven years thereafter, the Local Government have, by giving 12 months' previous notice, the right of terminating the agreement by paying to the Company the value calculated at 25 years' purchase of the average annual profits of the Company for the preceding three years, subject to a minimum of the capital expended and a maximum of 25 per cent. in excess of that sum. In the event of its being determined to construct a railway on a different gauge in place of the tramway, and if the Government and the Company fail to agree that the alteration shall be made by the Company, then and in such case, the Government have the right to acquire the tramway at any time on giving 12 months' notice in writing and paying to the Company a sum of 25 per cent. in excess of its capital expenditure.

The option to purchase the line which fell due in April 1948 was not exercised by the Government of India. It was neither exercised in 1955 nor in 1962. Next option will fall due on 18 April 1969.

(vii) *Power of the Company to surrender agreement*—Nil.

(viii) *Term of agreement* [*if not determined under* (vi)].—None specified.

Note :—The S. S. Light Railway became a Federal Railway with effect from 1st April 1937 and hence all the rights and obligations of Government under the Agreement dated 11 October 1905 between the local Government (U. P.) and the S. S. Light Railway Co., devolved upon the Government of India (Railway Board) from that date.

A—NON-GOVERNMENT RAILWAYS—*contd.*

9. SHAHDARA (DELHI)-SAHARANPUR LIGHT RAILWAY (NARROW GAUGE—0·762 METRE)—*concld.*

STATISTICS OF WORKING

Those for the periods prior to 1913-4 will be found in Appendix 38 to the Railway Administration Report for 1907 and in Appendix 1 to the Report for 1913-4.

Year	Route kilometrage open at end of each year	Total capital outlay, including suspense, to end of each year, *i.e.* outlay on (*i*) lines open, and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Moiety of surplus Profit paid to United Provinces Government / Government of India*	Total Income	Percentage of total Income on total capital outlay as giveen in column (3)	Earnings per route kilometre per week	Proportion of expenses to earnings	Amount credited to Renewal Reserve Account
1	2	3	4	5	6	7	8	9	10	11	12
	kilometres	Rs.	Rs.	Rs.		Rs.	Rs.		Rs.		Rs.
1913-4 .	148·86	43,42,421	6,17,500	3,48,514	8·02	91,286	2,57,228	5·92	80	43·53	
1914-5 .	148·86	43,89,762	6,48,190	3,57,708	8·14	93,128	2,64,580	6·02	83	44·76	
1915-6 .	148·86	44,13,488	5,49,809	2,80,278	6·35	53,230	2,27,046	5·14	71	49·08	
1916-7 .	148·86	44,11,392	6,68,824	3,92,996	8·90	1,10,678	2,82,318	6·39	86	41·23	
1917-8 .	148·86	44,63,101	7,15,494	3,70,892	8·31	1,03,083	2,67,809	6·00	92	48·17	
1918-9 .	148·86	45,14,868	7,94,163	3,80,011	8·41	1,04,686	2,75,325	6·09	103	52·15	
1919-20 .	148 86	45,71,187	7,57,370	3,21,156	7·02	72,385	2,48,771	5·44	98	57·59	
1920-1 .	148 86	45,50,806	8,39,967	3,36,646	7·40	78,323	2,58,323	5·67	109	59·92	
1921-2 .	148·86	47,14,872	8,65,085	3,17,176	6·73	68,587	2,48,589	5·27	111	63·32	
1922-3 .	148·86	47,28,307	10,69,978	6,68,586	12·02	1,94,292	3,74,294	7·91	138	46·86	
1923-4 .	148·86	47,06,052	10,27,917	5,93,152	12·60	2,06,576	3,86,576	8·21	132	42·28	
1924-5 .	148·86	47,62,496	11,64,238	6,79,859	14·27	2,49,745	4,30,114	9·03	150	41·60	
1925-6 .	148·86	49,93,212	10,21,943	5,00,917	10·03	1,57,857	3,43,060	6·87	132	50·98	
1926-7 .	148·86	49,84,811	9,60,590	4,61,794	9·26	1,19,033	3,42,761	6·87	124	51·92	
1927-8 .	148·86	50,01,304	10,33,153	5,72,225	11·44	1,76,568	3,95,657	7·91	133	44·60	
1928-9 .	148·86	50,00,461	10,53,171	6,05,794	12·11	1,77,632	4,28,162	8·56	136	42·47	
1929-30 .	148·86	52,02,739	10,58,804	5,98,664	11·97	1,72,954	4,25,710	8·51	137	43·45	
1930-1 .	148·86	50,21,622	8,96,412	4,69,300	9·30	1,08,073	3,61,227	7·19	116	47·64	
1931-2 .	148·86	49,95,301	8,31,309	4,32,057	8·65	1,90,081	3,41,976	6·85	107	48·03	
1932-3 .	148·86	49,94,304	8,85,806	4,63,349	9·28	1,05,967	3,57,382	7·15	114	47·69	42,500
1933-4 .	148 86	50,37,005	10,16,421	5,76,302	11·40	1,53,581	4,22,721	8·39	131	43·18	85,000
1934-5 .	148 86	50,67,084	8,32,327	3,95,649	7·80	54,832	3,40,817	6·72	107	52·40	85,000
1935-6 .	148·86	51,01,109	9,06,482	4,43,156	8·68	1,30,358	3,12,798	6·13	117	51·10	95,000
1936-7 .	148·86	51,13,325	9,66,099	4,81,014	9·40	1,12,232	3,68,782	7·21	125	50·20	85,000
1937-8 .	148·86	52,76,614	10,62,342	5,76,939	10·93	1,70,105	4,06,834	7·71	137	45·69	85,000
1938-9 .	148·86	51,30,050	9,33,503	4,62,502	9·01	87,435	3,75,067	7·31	121	50·45	85,000
1939-40 .	148·86	51,11,758	9,73,674	4,68,332	9·16	1,03,157	3,65,175	7·14	126	51·90	85,000
1940-1 .	148·86	51,50,003	12,32,746	6,97,028	13·53	1,94,241	5,02,787	9·76	159	43·46	85,000
1941-2 .	148·86	51,86,628	12,93,320	5,81,012	11·20	1,03,015	4,77,997	9·21	167	55·07	1,60,000
1942-3 .	148·86	52,84,214	15,03,261	7,39,217	13·98	1,40,993	5,98,224	11·32	194	50·82	1,60,000
1943-4 .	148·86	53,40,930	19,57,921	10,40,551	19·48	1,81,282	8,59,269	16·08	253	46·85	160,000
1944-5 .	148·86	54,83,618	22,31,440	11,38,848	20·76	1,83,961	9,54,887	17·41	288	48·96	1,60,000
1945-6 .	148·86	55,80,247	24,61,775	11,45,387	20·52	1,99,294	9,46,093	16·95	318	53·47	1,60,000
1946-7 .	148·86	55,71,503	27,63,327	12,01,514	21·57	4,20,248	7,81,266	14·02	357	56·52	3,00,000
1947-8 .	148·86	56,02,074	23,87,315	6,07,395	10·84	Nil	6,07,395	10·84	308	74·55	3,00,000
1948-9 .	148·86	59,50,606	35,62,981	11,10,608	18·66	2,58,971	8,51,637	14·31	460	68·83	4,00,000
1949-50 .	148·86	60,90,315	37,18,886	10,68,368	17·54	2,04,465	8,63,903	14·18	480	71·27	4,00,000
1950-1 .	148·86	61,55,173	37,67,530	10,16,144	16·51	2,11,406	8,04,738	13·07	487	73·02	4,00,000
1951-2 .	148·86	63,80,782	39,53,702	7,78,693	12·20	84,900	6,93,793	10·87	511	80·30	6,00,000
1952-3 .	148·86	65,26,981	38,52,746	6,22,702	9·54	3,169	6,19,533	9·49	498	83·84	6,00,000
1953-4 .	148·86	67,89,188	39,68,938	6,51,261	9·59	85,584	5,65,677	8·33	513	83·59	6,00,000
1954-5 .	148·86	68,60,165	40,04,906	4,51,506	6·58	Nil	4,51,506	6·58	518	88·72	6,00,000
1955-6 .	148·86	69,94,946	42,52,008	6,45,612	9·20	2,05,164	4,40,448	6·30	549	84·80	4,00,000
1956-7 .	148·86	70,37,074	44,09,921	8,74,025	12·42	1,01,448	7,72,577	10·97	570	80·18	4,00,000
1957-8 .	148·86	71,71,749	39,17,536	2,02,924	2·83	Nil	2,02,924	2·83	506	94·82	4,00,000
1958-9 .	148·86	72,19,500	29,76,254	—2,31,085	—3·20	Nil	—2,31,085	3·20	384	107·76	4,00,000
1959-60 .	148·86	71,47,164	36,62,781	3,65,653	5·11	63,212	3,02,441	4·22	473	90·01	2,36,183
1960-1 .	148·86	69,97,841	36,26,754	92,030	1·32	Nil	92,030	1·32	469	97·46	2,62,970
1961-2 .	148·86	71,62,459	34,93,996	1,11,807	1·56	Nil	1,11,807	1·56	451	96·80	1,14,165
1962-3 .	148·86	72,01,641	37,53,594	19,411	0·27	Nil	19,411	0·27	485	99·47	1,05,740
1963-4 .	148·87	72,17,350	39,64,264	53,502	0·74	Nil	53,502	0·74	512	98·65	1,51,483

*Since half year ended 31-3-1940.

B—PORT TRUST RAILWAYS—contd.

1. BOMBAY PORT TRUST RAILWAY (BROAD GAUGE—1·676 METRES)

The Bombay Port Trust Railway serves all the Docks of the Port of Bombay and also the Bunders on the east of the Island north of the Ballard Pier, as well as various depots allotted to certain trades. It is intended primarily for goods traffic.

It consists of a double line track for its whole length, as well as reception and sorting yards, nine stations and a large number of private sidings and numerous sidings in the docks.

Sanction to the construction of this line by the Bombay Port Trust was conveyed in Railway Board's Notification No. 152, dated 28 May 1913.

Progress in Opening

Sections of Railway 1	Date of opening 2	Kilometres 3	Total in kilometres 4
Raoli Junction to Timber pond level crossing	1-1-1915	7·47	
Timber pond level crossing to Nawab Tank Overbridge	1-1-1915	7·48	
Nawab Tank Overbridge to Ballard pier	1-2-1915	6·89	
Manson Road South Cabin to Eastyard, Alexandra Dock	1-2-1915	4·38	26·22
Total length of sidings	..	188·99	188·99
Total	..	..	215·21*

* Does not include temporary lines laid.

Details of Construction

Permanent way—5·34 kilometres of the track are laid with 44·61 kilograms/metre (90 lbs./yard) F. F. rails and 16·48 kilometres with 44·61 kilograms/metre (90 lbs./yard) 'R'.F.F. rails. The length of the track laid with pea-pod sleepers is 47·75 kilometres the rest of the tracks are laid with 37·13 kilograms/metre (75 lbs./yard) F.F. rails on wooden sleepers—principally sal—with spike fastenings. Bearing plates are also used at curves points and crossings.

Ballast—As the greater part of the Railway was laid on newly reclaimed ground, moorum ballast was used extensively for packing and boxing, but now that the ground has become consolidated, blue stone ballast is used throughout the main lines and most of the sidings.

Fencing—The line is fenced where necessary.

Curves—The radius of the sharpest curve is 175 metres outside the dock area and 122 metres approximately within the docks.

Gradients—The steepest gradient on the line is 1 in 278, near the Nawab Tank Bridge.

Contract—
Main Provisions of Contracts } —*Nil.* The line is owned and worked by the Bombay Port Trust.

Statistics of Working

Year 1	Route kilometrage open at end of each year 2	Total Caital outlay, including suspense, to end of each year *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction 3	Gross earnings 4	Net earnings 5	Percentage of net earnings on total capital outlay given in column (3) 6	Earnings per route kilometre per week 7	Proportion of expenses to earnings 8
	Kilometres	Rs.	Rs.	Rs.		Rs.	
1958-59	212·27	3,44,89,295	73,61,911	—30,21,141	—8·76	5,375	141·04
1959-60	213·73	3,52,32,073	85,83,184	—26,21,946	—7·44	6,295	130·55
1960-61	214·95	3,56,03,207	83,78,400	—32,15,892	—9·03	6,145	138·38
1961-62	214·98	3,95,71,679	76,17,415	—47,19,680	—11·92	5,587	161·96
1962-33	215·21	4,00,42,402	78,39,817(*a*)	18,11,686	4·52	13,084	89·84
1963-64	215·21	4,03,50,298	1,06,65,021(*b*)	—48,71,017	—12·07	7,822	145·67

Note—Statistics for the period prior to 1958-59 were not available.

(*a*) Includes Rs. 72,03,100 on account of arrears of terminals.

(*b*) Includes Rs. 2,94,303 on account of arrears of terminals.

B—PORT TRUST RAILWAYS—contd.

2. CALCUTTA PORT COMMISSIONERS' RAILWAY (BROAD GAUGE—1·676—METRES)

The railway provides the terminal for the Eastern Railway and the South Eastern Railway for goods traffic to and from the Port of Calcutta and also deals with local goods traffic within the Port between warehouses, sheds and the steamer berths on the river front and at the Kidderpore Docks and King George's Dock. The system also comprises special routes for the reception and despatch of coaching stock used for the conveyance of troops.

The Eastern Railway connects with the system at Telkul Ghat on the Howrah side of the River, at East Dock Junction Majerhat and Chitpur (*via* Sealdah division) and *via* South Eastern Railway at West Dock Junction and at Shalimar Junction on the Howrah side.

PROGRESS IN OPENING

Main Line—	Date of opening	Kilometres
Bagh Bazar to Meerbohur Ghat	11-1-1875	2·83
Cossipore (Gun Foundry Road) to Bagh Bazar (Chitpur)	1-6-1878	1·83
Meerbohur Ghat to Jetties	1-6-1878	1·35
Jetties to Chandpal Ghat	1-12-1880	0·51
Chandpal Ghat to Kidderpore Dock (Graving Dock)	1-1-1887	3·48
Graving Dock (*via* Kidderpore Dock) to Majerhat (East Dock Junction)	1893	3·77
East Dock Junction to West Dock (South Eastern Railway Junction)	1901	2·17
East Dock Junction to Garden Reach Berths	2-7-1916	4·26
Telkul Ghat (Eastern Railway) to Shalimar (South Eastern Railway)	31-12-1901	3·54
Branches—		
East Dock Junction to Chetla	1893	2·42
G. C. D. Yard to King George's Dock	1928	2·02
Dock West to East Main Dock	1942	0·14
K.G.D. to C.E.S.C.	1942	2·43
K.G.D. to Brooklyn	1942	2·80
Brooklyn to J.J.P.	1942	1·48
E.J.C. to J.J.P.	1942	1·03
Total of main line and branches		36·09

The total length of track in main lines, marshalling yards, sidings, etc., is as follows:—

	Kilometres
Kidderpore Docks Section	154·08
King George's Dock and Garden Reach Berths Section	73·53
South Section	55·60
Calcutta and Shalimar Section	58·28
Total	341·49

DETAILS OF CONSTRUCTION

Permanent way—The greater part of the track consists of 44·61 kilograms/metre (90 lbs/yard) (224·04 kilometres of track) section flat footed rails laid on transverse timber sleepers. The remaining length of the track consists of 37·13 kilograms/metre (75 lbs/yard) (116·16 kilometres) section flat footed rails also laid on transverse timber sleepers and 29·76 kilograms/metre (60 lbs/yard) (1·29 kilometres) section flat footed rails laid on transverse concrete beams. The 37·13 kilograms/metre (75 lbs./yard) and 29·76 kilograms metre (60 lbs./yard) section rails are programmed to be replaced by 44·61 kilograms/metre (90 lbs/yard) section rails.

Ballast—Most lines are ballasted with jhama brick khoa. In certain small sections Pakur stone and also blast furnace slag is in use as ballast. Jhama brick khoa is programmed to be replaced in near future by stone ballast.

Fencing—All the Railways yards & lines are fenced.

Curves—The radius of the sharpest curve is 76 metres. But the minimum radius now aimed at in New Works is 167 metres.

Gradients—The approach to the Hastings lift bridge is now flat. The track underneath the Majerhat Bridge carrying the Diamond Harbour Road now has a gradient of 1 in 300.

B—PORT TRUST RAILWAYS—contd.

2. CALCUTTA PORT COMMISSIONERS' RAILWAY (BROAD GAUGE—1·676 METRES)—*concld.*

CONTRACT

The system was constructed by the Port Commissioners out of Port Trust Funds and is maintained and worked by them. The land on the left bank of the Hooghly between Chandpal Ghat and Ahiritolla Ghat was conveyed to the Commissioners at a quit rent of Rs. 37,292 per annum. The land north of Ahiritolla was acquired by the Commissioners under the Land Acquisition Act. The Commissioners have only a right of user in the land between Chandpal Ghat and Hastings for the purpose of the railway.

The land on the right bank of Hooghly between Telkul Ghat Road and Sheebpur Ghat Road was acquired by the Commissioners under the Land Acquisition Act and that between Sheebpur Ghat and the South Eastern Railway Yard was conveyed to the Commissioners at a quit rent of Rs. 3,090·64.

STATISTICS OF WORKING

Year	Route kilometrage open at the end of each year	Total capital outlay including suspense to end of year *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings	Net earnings	Percentage of net earnings on total capital outlay given in column (3)	Earnings per route kilometre per week	Proportion of expenses to earnings
1	2	3	4	5	6	7	8
	kilometre	Rs.	Rs.	Rs.		Rs.	
		Not available					

3. MADRAS PORT TRUST RAILWAY [MIXED GAUGE, BROAD GAUGE (1·676 METRES) AND METRE GAUGE (1·000 METRE)]

The Madras Port Trust Railway consists of 55·908 kilometres of mixed gauge railway (broad gauge —1·676 metres and metre gauge—1·000 metre) and 3·349 kilometres of Broad Gauge only of which only 0·466 kilometre has to be passed by the Additional Commissioner of Railway Safety, Bangalore, as passenger line for which an application has been forwarded. The railway is connected with the Southern Railway at Royapuram (broad gauge) and Madras Beach (metre gauge) Stations. The Railway is used for receiving, delivering, transporting, booking and despatching only such goods and for carrying only such passengers as enter or leave the Trust's premises by sea and this has been publicly notified.

The Railway was gradually brought into being for the better performance of the services which the Trust, purely as a Port Trust, is enabled, under its act, to perform for the public within its premises. Up to 1st November 1916 the duty of delivering incoming goods to consignees and the duty of booking outgoing goods from the Harbour were performed by the neighbouring Madras and Southern Mahratta or South Indian Railway as the case might be. These Railways were provided by the Trust with sufficient accommodation in its premises to carry on their business without the intervention of the Trust. The Trust confined itself to the haulage, loading and unloading, of wagons within its premises on behalf of the Railways, while the latter collected from owners on the Trust's behalf the charges levied by the Trust for such services.

Since 1st November 1916 the booking and delivery of rail-borne goods within the Trust's premises are being carried out by the Trust instead of by the Railways under suitable working agreements.

DETAILS OF CONSTRUCTION

Permanent way—The permanent way consists of 37·13 kilograms/metre (75 lbs./yard) standard F. F. rails, laid on either reinforced concrete or timber sleepers, but on revetment tracks 44·61 kilograms/metre (90 lbs./yard) section rails are used as these rails are exposed to salt spray. The existing 37·13 kilograms/metre rails are being gradually converted into 44·61 kilograms/metre rails to conform to the present standards.

Ballast—The line is ballasted with sand.

Fencing—The line is unfenced.

Curves—The sharpest curve is of 122 metre radius.

Gradients—The line is practically level throughout.

Ownership—The line is owned and worked by the Madras Port Trust.

B—PORT TRUST RAILWAYS—concld

3. MADRAS PORT TRUST RAILWAY—*concld.*

STATISTICS OF WORKING

Year	Route kilometrage open at end of each year (b)	Total capital outlay, including suspense, to end of each year, *i.e.*, outlay on (*i*) lines open and (*ii*) lines partly or wholly under construction	Gross earnings (a)	Net earnings (a)	Percentage of net earnings on total capital outlay given in column (3) (c)	Earnings per route kilometres per week (d)	Proportion of expenses to earnings (a)
1	2	3	4	5	6	7	8
	kilometres	Rs.	Rs.	Rs.		Rs.	
1913-4	..	..	..	..	..	..	..
1914-5	..	..	..	..	..	..	..
1915-6	..	..	..	..	..	..	..
1916-7	..	..	..	..	..	..	
1917-8	..	..	1,30,008	—41,299	..	..	
1918-9	..	..	1,43,474	—64,868	..	..	131·77
1919-20	..	..	2,65,689	—70,875	..	..	145·21
1920-1	..	10,10,410	2,74,240	—73,451	..	..	126·68
1921-2	..	16,10,658	2,79,561	—92,353	..	..	126·78
1922-3	..	16,10,658	3,40,352	—47,872	..	..	133·04
1923-4	..	20,65,025	3,53,263	—63,798	..	..	114.07
1924-5	..	21,63,390	3,97,373	—19,515	..	..	118·06
1925-6	..	21,72,950	3,93,466	—1,59,795	..	..	104·91
1926-7	..	22,71,004	4,16,085	—1,51,373	..	..	140·61
1927-8	..	22,87,342	5,03,069	—1,45,442	..	..	136·38
1928-9	..	24,74,130	5,67,421	—1,55,135	..	..	128·91
1929-30	28·97	25,02,014	5,45,524	—1,12,767	..	362	127·34
1930-1	28·97	28,08,202	4,93,472	—2,46,352	..	328	120·67
1931-2	28·97	30,44,592	4,46,923	—2,08,213	..	292	149·92
1932-3	28·84	30,44,686	3,21,728	—2,62,843	..	214	146·59
1933-4	28·66	30,44,686	3,39,647	—1,68,846	..	228	181·70
1934-5	28·21	30,44,686	3,33,534	83,840	..	227	149·71
1935-6	27·81	30,44,686	2,83,643	—98,806	..	196	125·14
1936-7	27·63	30,44,686	3,22,981	—94,085	..	225	134·76
1937-8	27·63	30,79,008	3,28,621	—87,291	..	229	126·56
1938-9	27·94	30,92,154	3,71,247	—66,960	..	256	118·04
1939-40	27·94	30,92,154	3,62,703	—89,118	..	250	124·57
1940-1	27·87	30,92,154	2,68,436	—1,52,762	..	185	156·91
1941-2	27·87	30,92,154	2,88,044	—1,43,991	..	199	149·99
1942-3	27·87	30,92,154	3,06,195	—1,48,112	..	211	148·37
1943-4	27·83	30,92,154	5,39,709	—15,122	..	373	102·80
1944-5	29·50	30,92,154	10,18,716	+2,84,504	9·20	664	72·07
1945-6	29·45	30,92,154	11,80,950	+3,06,468	9·91	771	74·05
1946-7	29·48	30,94,885	11,57,542	+3,84,360	12·42	755	66·80
1947-8	29·64	30,94,885	7,91,085	—3,48,668	..	513	144·07
1948-9	29·64	30,94,885	12,06,769	+62,018	2·00	783	94·86
1949-50	29·53	30,94,885	10,92,310	—1,97,222	..	711	118·06
1950-1	29·77	30,94,885	12,67,577	+33,925	1·10	819	97·32
1951-2	29·77	31,13,911	11,24,878	—1,89,432	..	727	116·84
1952-3	30·01	31,13,911	12,90,002	—49,735	..	827	103·86
1953-4	30·01	31,51,130	13,72,415	—1,00,576	..	879	107·33
1954-5	31·14	32,03,019	12,93,133	—82,740	..	798	106·40
1955-6(e)	36·87	32,03,019	12,48,535	—2,26,957	..	651	118·18
1956-7(e)	36·87	32,03,019	15,14,248	—1,62,470	..	790	110·73
1957-8(e)	40·15	32,03,019	22,14,543	+3,22,862	10·08	1,061	85·42
1958-9	46·28	36,73,128	18,48,655	—4,68,436	..	768	125·34
1959-60	50·95	40,30,237	29,58,240	+1,05,774	2·62	1,117	96·42
1960-1	53·22	42,03,493	21,36,938	—6,88,288	..	779	132·21
1961-2	53·65	@	27,64,951	—64,834	..	991	102·34
1962-3	54·12	@	48,01,826	+6,83,970	..	1,706	85·76
1963-4	59·26	@	51,93,971	+10,11,068	..	1,686	80·53

(*a*) The figures are available only from 1917-8 the year in which the Madras Port Trust Railway became a member of the Indian Railway Conference Association.

(*b*) Statistics have not been maintained for each year's length of construction. The total kilometrage at the end of 1929-30 is about 28·97 kilometres.

(*c*) This Railway has been working at a loss, its main earnings being only the harbour terminal charges. Hence the percentage in this column has not been filled up.

(*d*) As this kilometrage open for each year is not available for the years previous to 1929-30 the figures for 1929-30 and subsequent years only are given.

(*e*) Although, there is an increase in the kilometrage of the Railway tracks during the year 1955-6, the figures under column 3 stand unaltered, as the Capital Block Account will be adjusted only after the accounts for the work are closed.

@ The accounts of the estimate under which the tracks were laid from 1961-62 onwards have not yet been closed.

APPENDICES

APPENDIX A-I

HISTORY OF THE MANUFACTURING UNITS

(1) CHITTARANJAN LOCOMOTIVE WORKS

HEADQUARTERS—CHITTARANJAN

Administrative set-up—The General Manager is in the overall charge of the Chittaranjan Locomotive Works, who is assisted by the Chief Mechanical Engineer, the Financial Adviser and Chief Accounts Officer, two Officers in the inter administrative grade, seven other officers of the junior administrative rank and a number of senior scale, junior scale and class II officers.

HISTORY : The necessity to undertake locomotive building in the country was felt by the Indian Railways as far back as the eighties of the last century. Most of the major railways at that time were Company-managed, and each of these had its own procurement policy and there was no planned effort to build up the locomotive industry in India. The East Indian Railway made some efforts to build locomotives in their workshop at Jamalpur. The Bombay, Baroda and Central India Railway also attempted to meet their replacement programme by building locomotives in their own repair workshops at Ajmer. Between 1880 and 1882, 12 locomotives of the 2-4-0 type were built in Jamalpur workshops and 4 engines of the 0-6-0 type were built in the Allahabad workshops (which no longer exists) of the ex-East Indian Railway. Again between 1899 to 1923 the East Indian Railway Workshops at Jamalpur produced 216 broad gauge locomotives and 103 boilers before the manufacture was given up in 1926. At Ajmer, 435 complete metre gauge locomotives were built between 1896 and 1940. The importance of having an indigenous locomotive manufacturing industry was strongly felt by the Government of India during the first World War when locomotive imports ceased. In 1921 a Joint Stock Company called The Peninsular Locomotive Co. Ltd., was incorporated but the Company was dissolved in 1924 without having gone into production.

The subject, however, remained under active consideration of the Central Legislature and in September 1939 the Council of State adopted a resolution recommending to the Governor General in Council that the "Railway Board should take early steps to carry out a thorough investigation into the possibilities of building locomotives in India and submit a report". The Committee* which was accordingly constituted examined the question and reported that there were no difficulties in the way of building of locomotives in India; that the provision of a workshop for the manufacture of locomotives could be made a sound financial proposition; that the requirement of Indian Railways for broad gauge locomotives and boilers for a considerable number of years to come would be sufficient to ensure a steady output from a reasonably sized workshop. The Committee also recommended that the Kanchrapara Workshops (of the Bengal and Assam Railway) be remodelled and adapted to the manufacture of locomotives. The wartime difficulties, however, did not permit of this scheme being pursued. When the war was over, steps were taken to implement the recommendations of the Committee, and Chandmari, a place near Kanchrapara, was selected as the site. Planning for the project was taken in hand but there was a further delay as a result of the partition of the country and although some work was commenced in December, 1946, it became necessary to consider a change of the site.

In December, 1947, it was decided to locate the Factory at Chittaranjan, near Mihijam, situated approximately 39·19 kilometres from Asansol Junction of the East Indian Railway, and readily accessible from the steel mills and from the Calcutta Port, the place selected offered an ideal site. The rocky soil was an advantage in erecting foundations for the heavy structural works and the undulating terrain helped to solve the problem of water drainage for the large township which was contemplated. The schemes of the Damodar Valley Corporation that envisaged hydro-electric and thermal power stations and the proximity of the Maithon Dam held an assurance of availability of adequate power and water in the near future.

CONSTRUCTION—The Abstract Estimate was sanctioned in November 1948. Construction work was initiated in March 1948, when a railway siding linking the proposed factory site with the railway main line was laid, and men and materials started moving in on the site.

The site work in the workshop area commenced in May 1948, and the building of the shops started in June 1948 when the foundation work of the Main Assembly Shop was taken in hand. The construction works in the other shops which were planned, were progressively taken in hand and the entire construction of all the shops finished in December 1951 The bulk of the available machines were finally installed by October 1952, the remaining machines being put up as they were received.

The construction of the township proceeded along with the building of the shops.

The township was constructed in separate colonies of composite self-sufficient units.

The principal features of the project as completed are as under :—

Covered area in the shops	2,36,090·5 square kilometres
Tonnage of steel for the shops	11,647·0 tonnes
Track kilometrage of sidings (broad gauge)	31·42 kilometres
Roads inside shops	14·02 kilometres
Roads in the township	134·04 kilometres
Number of officers' bunglows	51
Number of quarters for staff	6,665
Number of cranes/traversers—	
E.O.T. cranes.	63
Traverser	1
Total connected load of power	18,858 kilowatts

INITIATION OF PRODUCTION—On 26th January, 1950 production was formally inaugurated by Shrimati Basanti Devi, (after whose illustrious husband the township and the workshops have been named). The '*Namakaran*' Ceremony was performed by the President of India on the 1 November, 1950.

*Report on the construction of locomotives in India in State Railway Workshops by Messrs. J. Humphries and Kalyan Srinivasan—January, 1940.

(1) CHITTARANJAN LOCOMOTIVE WORKS—*contd.*

TECHNICAL AID AGREEMENT—The Government of India entered into an agreement for a period of 5 years from 9 December 1949 with the Locomotive Manufacturers Co. Ltd., London, for obtaining technical aid in the development of, and for putting into effective operation, the locomotive works at Chittaranjan.

On the expiry of the agreement with the Locomotive Manufacturers Co. Ltd., a technical aid agreement was entered into for a period of 5 years from 9th December 1954 with the North British Locomotive Co. Ltd., Glasgow, U.K., which was one of the important associate members of the Locomotive Manufacturers Association.

EXPANSION OF THE WORKS—A scheme for expansion of the workshops at an estimated cost of Rs. 2·28 crores was sanctioned in 1957-58. This scheme included the extension of the existing shops, along with installation of additional machinery, construction of about 1,000 units of additional staff quarters and supply of raw water from the Maithon Dam of Damodar Valley Corporation to Chittaranjan. The works included in the scheme have nearly been completed.

The Steel Foundry—A technical collaboration agreement was entered into for 5 years from the 21st January 1960 with Messrs F. H. Llycd and Company Limited, London for the establishment of a Steel Foundry at Chittaranjan. The original scheme envisaged a production capacity of 7,000 tons of steel casting per year. A supplemental technical collaboration agreement was entered into with Messrs F. H. Llyod and Company Limited on the 20th November 1963 for increasing the production capacity of steel castings from 7,000 tons to 10,000 tons.

A revised abstract estimate for the Steel Foundry Project totalling Rs. 6·30 crores was sanctioned by the Railway Board in January 1963. The overall progress on the 31st March 1964 was 47 per cent. The Steel Foundry started production from November 1963.

Electric Loco Project—An abstract estimate, totalling Rs. 2·26 crores, for developing AC electric loco manufacturing capacity, was sanctioned by the Railway Board in October 1962. The overall progress on the 31st March 1964 was 25 per cent.

A collaboration agreement was entered into for 8 years from the 3rd November 1962 with a consortium of manufacturers of Europe known as GROUP for the manufacture of electric locomotives.

AGREEMENTS AND CONTRACTS—*Nil*. The Chittaranjan Locomotive Works are owned and managed by Government.

Capital-at-Charge—The Capital-at-charge at the end of each year including investment in the shares of Telco and Miscellaneous Advance (Telco) borne in the books of the Chittaranjan Locomotive Works is as under :—

(Figures in thousands of Rs.)

Year	Fixed Assets						Floating Assets			
	Original Project	Expansion	Steel Foundry	Electric loco project	Other Additions	Total	Stores and Manufacturing Suspense and Miscellaneous Advance (Capital)	Total	Investment in the shares of Telco	Miscellaneous Advance (Telco)
1	2	3	4	5	6	7	8	9	10	11
1949-50	6,31,77	..	..	..	..	6,31,77	64,03	6,95,80	..	13,80
1950-51	11,18,12	..	..	..	..	11,18,12	1,51,30	12,69,42	50,00	5,90
1951-52	13,54,59	..	..	..	..	13,54,59	2,06,40	15,60,99	1,50,00	26
1952-53	14,38,46	..	..	..	..	14,38,46	4,31,62	18,70,08	2,00,00	55,21
1953-54	14,56,40	..	..	..	..	14 56,40	5,64,87	20,21,27	2,00,00	40,52
1954-55	14,69,32	32	..	..	1,64	14,71,28	5,99,88	20,71,16	2,00,00	..
1955-56	14,60,20	6,09	..	..	8,36	14,74,65	4,91,51	19,66,16	2,00,00	70,00
1956-57	14,60,97	13,08	..	..	10,56	14,84,61	2,54,23	17,38,84	2,00,00	..
1957-58	14,60,58	28,41	..	..	20,80	15,09,79	4,25,58	19,35,37	2,00,00	..
1958-59	14,64,65	56,75	..	..	23,43	15,44,83	4,98,89	20,43,72	2,00,00	..
1959-60	14,66,55	1,03,66	1	..	24,68	15,94,90	4,79,81	20,74,71	2,00,00	..
1960-61	14,66,28	1,38,55	6,29	..	35,58	16,46,70	3,25,13	19,71,83	2,00,00	..
1961-62	14,63,65	1,55,70	35,67	..	44,97	16,99,99	3,14,77	20,14,76	2,00,000	..
1962-63	14,63,67	1,92,35	95,75	14,68	57,94	18,24,39	4,40,09	22,64,48	2,00,000	..
1963-64	14,64,78	2,04,57	2,68,79	64,42	68,33	20,70,89	6,68,68	27,39,57	2,00,000	..

The break-up of the Capital-at-charge under fixed assets as on 31 March 1964 is as under :

I. Project

(Figures in lakhs of Rs.)

	I. Project	Township	Workshop and Offices	Total
	Permanent—			
1	Land	25·04	3·08	28·12
2	Roads	53·62	..	53·62
3	Buildings	378·22	222·38*	600·60
4	Water Works	31·16	15·40	46·56
5	Machinery	..	337·74	337·74
6	Electric installations	42·14	68·27	110·41
7	General charges	107·25	130·42	237·67
8	Other expenditure	33·12	16·94	50·06
	Total Project	670·55	794·23	1,464·78

* Includes expenditure on roads inside the Workshop.

(1) CHITTARANJAN LOCOMOTIVE WORKS—*contd.*

(In Lakhs of Rs.)

	II. Addition	To end of 1956-57	To end of 1957-58	To end of 1958-59	To end of 1959-60	To end of 1960-61	To end of 1961-62	To end of 1962-63	To end of 1963-64
1.	Stabilisation scheme	13·08	28·41	56·75	103·66	138·55	155·70	192·35	204·57
2.	Steel Foundry	..	..	..	0·01	6·29	35·67	95·75	268·79
3.	Electric Locos	..	..	..	..	..	..	14·68	64·42
4.	Other expenditure	10·56	20·80	23·43	24·68	35·58	44·97	57·94	68·33
	Total	23·64	49·21	80·18	128·35	180·42	236·34	360·72	606·11

Statistics of orders complied with—

Up to the end of March, 1964, the outturn against Railway Board's orders for locomotives was as under :—

Order No.	No. of Locos.	Type of Locos.	Total turned out
1st Order	100	'WG'	Completed
2nd Order	107	'WG'	Do.
3rd Order	50	'WG'	Do.
4th Order	100	'WG'	Do.
5th Order	220	'WG'	Do.
6th Order	10	'WT'	Do.
7th Order	220	'WG'	Do.
8th and 9th Order	118	'WG'	Do.
10th Order	172	'WG'	Do.
11th Order	120	'WG'	Do.
12th Order	90	W.G.	Do.
13th Order	36	W.P.	Do.
15th Order	50	W.P.	25 completed upto 31-3-1964
16th Order	107	W.G.	Completed
17th Order	20	W.T.	*Nil*
18th Order	93	W.G.	Completed
19th Order	33	W.P.	*Nil*
20th Order	24	W.L.	*Nil*
21st Order	73	W.P.	*Nil*
22nd Order	51	W.G.	Completed
23rd Order	92	W.G.	72 completed up to 31-3-1964
Electric Locomotives			
1st Order	10	D.C. (M.T.)	Completed
2nd Order	11	D.C. (F.T.)	Do.
4th Order	32	AC (F.T.)	2 completed upto 31-3-1964

Statistics of annual outturn—

Year	No. of locomotives		No. of CLW manufactured boilers
	Steam	Electric	
1950-51	7	..	..
1951-52	17	..	..
1952-53	33	..	11
1953-54	64	..	30
1954-55	98	..	70
1955-56	129	..	107
1956-57	156	..	120
1957-58	164	..	142
1958-59	165	..	162
1959-60	173	..	178
1960-61	173	..	180
1961-62	171	5	187
1962-63	169	14	185
1963-64	172	4	186

(1) CHITTARANJAN LOCOMOTIVE WORKS—*concld.*

Distribution of locomotives and boilers by types as on 31-3-1964

Type	Number distributed
(i) Locomotives	
W. G. Steam	1,620
W. P. Steam	61
W. T. Steam	10
D. C. Electric	21
A. C. Electric	2
(ii) Boilers	
W. G. }	1,534
W. P. }	
X. D.	24

Development Suspense Balance—

The W. G. locomotives were delivered to the Railways at a fixed selling rate of Rs. 5·35 lakhs upto the 31st March 1957. The selling rate was revised to Rs. 4·33 lakhs from the 1st April 1957 and remained current upto the 31st March 1960. The selling rate was further revised to Rs. 4·30 lakhs from the 1st April 1960. The selling rate fixed for W. T., W.P. steam and D. C. electric locomotives to end of the 31st March 1964 was Rs. 3·50 lakhs, Rs. 4·80 lakhs and Rs. 10·32 lakhs respectively.

The difference between the cost of production and the selling rate of locomotives, the collaboration fees payable to Messrs F. H. Llyod and Company for the Steel Foundry, expenditure incurred for the training of officers and staff abroad for the Steel Foundry prior to November 1963 and the difference in the cost of manufacture and market price of steel castings was held under 'Development Suspense Accounts', the balances under which are as under—

(Figures in thousands of Rs.)

1949-50	..	
1950-1	..	
1951-2	..	
1952-3	1,20,94	Dr.
1953-4	1,86,00	Dr.
1954-5	1,30,11	Dr.
1955-6	96,54	Dr.
1956-7	1,52,06	Cr.
1957-8	1,32,62	Cr.
1958-9	1,57,82	Cr.
1959-60	1,69,16	Cr.
1960-1	1,65,03	Cr.
1961-2	68,69	Cr.
1962-3	69,99	Cr.
1963-4	46,34	Cr.

Depreciation Reserve Fund—The balances held under the Depreciation Reserve Fund at the end of each year are indicated below—

1949-50	..	
1950-1	..	
1951-2	21,59	Cr.
1952-3	55,99	Cr.
1953-4	94,62	Cr.
1954-5	1,35,14	Cr.
1955-6	1,81,06	Cr.
1956-7	2,34,84	Cr.
1957-8	3,49,11	Cr.
1958-9	4,19,49	Cr.
1959-60	4,92,96	Cr.
1960-1	5,67,94	Cr.
1961-2	7,00,45	Cr.
1962-3	8,05,65	Cr.
1963-4	9,01,46	Cr.

(2) INTEGRAL COACH FACTORY

HEADQUARTERS—Perambur, Madras.

Administrative set-up—Up to the 31st July 1963 the Chief Administrative Officer was in the overall charge of the Integral Coach Factory. With effect from the 1st August 1963 the post of the Chief Administrative Officer was, however, upgraded to that of the General Manager who, since then, continues to be the head of the Factory's administration, assisted by two other officers, *viz.* the Chief Mechanical Engineer and the Financial Adviser and Chief Accounts Officer.

History—The Second World War imposed a heavy strain on the transportation machine. It had left it in a state of serious deterioration. The most serious problem facing the railways was the task of rehabilitation and making adequate provision for new equipment. The arrears of renewals accumulated by 31st March, 1951 amounted to nearly 5,500 coaches. There was limited capacity available in the railway workshops for the manufacture of coaches and there was little scope for private enterprise. The volume of passenger traffic had also shown unprecedented increase. It was, therefore, felt that arrangements should be accelerated to enable the country and the railways to become increasingly self-sufficient in respect of their requirements. It was decided in 1948 to set up a new undertaking for manufacture of broad gauge passenger coaches. It was also considered desirable to design the factory for the construction of carriages of all-steel light weight construction by modern methods of production. A technical aid agreement was thereupon concluded with the Swiss Car and Elevator Manufacturing Corporation Limited, Schlieren, Zurich, Switzerland who had made considerable progress in the development of design of all-steel light weight carriages. It was considered at one stage that this factory should be located in Bangalore, as an annexe to the Hindustan Aircraft Limited. However, after comprehensive survey of several alternative sites for locating the factory, preferably close to the railway workshops, the vacant railway land to the west of the Locomotive Repair Shops of the Southern Railway at Perambur was chosen as the final site, in June, 1951. Work was started in February 1952 and the project took final shape early in 1955. The project, including machinery, plant and equipment, was sanctioned at an estimated cost of Rs. 7·35 crores. The details are given below :—

(Rs. in crores)

Department	Revised Estimate	As per Completion Report
Civil Engineering	3·05	2·92
Mechanical Engineering	3·65	3·35
Electrical Engineering	0·63	0·70
Direction and General	0·02	0·01
Total	7·35	6·98

The first machine was installed on the 22nd January 1955 and the production commenced on the 2nd October 1955.

The factory consists of 10 shops and a transport shed having a covered area of about 84,443 square metres, the biggest being the Assembly Shop, 304·80 metres long and 79·25 metres wide. The workshops are all founded on R. C. C. piles with reinforced top caps to take the heavy stresses coming on them due to cranes and wind loads. The factory layout had been planned carefully to ensure direct flow of material during the production.

The coach production here is of the all-welded integral construction and the tubular structure enables the forces sustained by the coach to be borne by the entire body including the skin. It is this 'stressed-skin' construction that has led to the considerable reduction in weight compared to the conventional coach. The strength inherent in the integrally constructed coaches renders them practically immune to the hazard of telescoping and wrecking of bodies in the event of any serious accident. The springing arrangement ensures smooth riding of the carriage during varying speeds making travel very much more comfortable. A fully furnished broad gauge third class integral coach weighs about 35·56 tonnes, being 7·11 tonnes lighter than conventional timber bodied coach on steel underframe in spite of the body length and width being increased from 20,726 mm. × 3,048 mm. to 21,336 mm. × 3,251 mm. Similarly the tare weight of the metre gauge coaches has been retained at 26/27 tonnes in spite of the body length and width being increased from 17,780 mm. × 2,591 mm. to 19,660 mm. × 2,743 mm.

The production since the commencement in October, 1955 is given below :—

Year	Number of coach shells	
	As per original target	Actual outturn
1955-56	8	12
1956-57	49	88
1957-58	149	222
1958-59	255	381
1959-60	331	447
1960-61	350	583
1961-62	360	598
1962-63	600	600
1963-64	600	605
Total	2,702	3,536

(2) INTEGRAL COACH FACTORY—*contd.*

Type-wise break-down of the 3,536 coach shells produced up to the 31st March 1964 is given below :—

Types	Number of coach shells produced	
	Broad Gauge	Metre Gauge
Third class	1,047	224
T. L. R.	498	..
Third (conventional)	115	..
First class	617	16
Third sleeper	150	..
T. L. R. (conventional)	185	..
First and third composite	444	1
E. M. U. (A)	57	..
E. M. U. (B)	4	..
E. M. U. (C)	118	..
E. M. U. (D)	60	..

The full rate production was actually achieved 21 months ahead of the target time.

In addition to the production of coach shells, the factory also undertook to manufacture the following types of rolling stock :

1. Bogies for (*i*) Fish Vans, (*ii*) President's twin car sets and (*iii*) Generator car of de-luxe rakes.
2. Broad gauge BOX and ORE wagon prototypes with AAR and Schaku couplers.
3. Metre gauge diesel shunter.
4. Broad gauge electric multiple unit motor coach prototypes with Hitachi (Japan) and A.E.I. (United Kingdom) traction equipment for Calcutta area suitable for AC traction.
5. Broad gauge first class exhibition coaches.
6. Metre gauge shells for track recording cars and kitchen cars.
7. Metre gauge shell and bogies for the diesel railcar twin-set prototype.

The second shift was introduced from April 1959 to meet the increasing requirements of coaches. An incentive scheme of payment by results was introduced with a view to improving the efficiency in the production. Commencing with one section of the machine shop in January 1960, this system had been gradually extended to almost all the production shops. The results obtained from the introduction of the second shift and the incentive system of payment were quite satisfactory as there had been increased production as well as improved efficiency.

PART II—FURNISHING DIVISION

Originally it was anticipated that the Railway workshops would be able to furnish the coach shells produced in the Integral Coach Factory but due to the impact of the Second Five Year Plan, the Railways became no longer in a position to furnish the shells turned out from the Factory. It was, therefore, decided in September 1956 to establish an Annexe to the Integral Coach Factory at an estimated cost of Rs. 3·69 crores to furnish shells at the Factory itself. The department-wise break-down of the cost is shown below:—

(Rs. in crores)

Departments	As per abstract estimate	As per completion estimate
Civil Engineering	2·11	1·91
Mechanical Engineering	1·18	0·98
Electrical Engineering	0·29	0·40
Direction and General	0·11	0·08
Total	3·69	3·37

The factory consists of 7 shops having a covered area of 51,700 square metres and the workshop superstructure is in prefabricated reinforced concrete using twisted steel reinforcement. Global tenders invited for the construction of the workshop structures of the project could not be finanlised early, as the project was not cleared by the Planning Commission till the end of 1958-59. The work on the erection of the workshops was taken in hand from July 1960. The pile foundation work was ahead of the erection work.

(2) INTEGRAL COACH FACTORY—*contd.*

Pending construction and completion of this new Furnishing Factory, the furnishing work was taken up at the Integral Coach Factory on a priority basis using the available covered space by providing temporary furnishing facilities at an estimated cost of Rs. 21 lakhs. Work in this connection, was commenced on the 1st October 1956 and completed on the 31st March 1959 at a cost of Rs. 10,80,451. The completion report was submitted to the Railway Board on the 31st October, 1961.

The Permanent Furnishing Project was also commenced in November 1956 at an estimated cost of Rs. 3,67,59,981 and the Project was opened on the 30th September 1962. The completion estimate amounting to Rs. 3,37,71,983 was submitted to the Railway Board on the 29th September 1964. By the 31st March 1964, the physical progress of the Project was: Civil Engineering 99·5 per cent, Mechanical Engineering 87 per cent and Electrical Engineering 95·5 per cent.

The first coach furnished at the Furnishing Division was launched on the 16th January 1962. At present, the entire furnishing work is being done at this Factory. The shops have been developed in phases to undertake manufacture of most of the items required for furnishing the coaches.

Up to the 31st March 1964, a total of 1,652 coaches were furnished, the type-wise details of which is shown below :—

Type of Coaches	Number of coaches furnished	
	Broad Gauge	Metre Gauge
Third class	474	109
T. L. R.	113	..
T. C. N. (3-tier)	125	..
T. C. N. (2-tier)	25	..
First Class	415	6
Third class (conventional)	5	..
T. L. R. (Conventional)	5	..
First-cum-third class	189	1
E. M. U. (A)	46	..
E. M U. (B)	4	..
E. M. U. (C)	89	..
E. M. U. (D)	45	..
First-cum-luggage	..	1
Total	1,535	117

General Features—The principal features of the Shell and Furnishing Divisions are indicated below:—

	Shell Division	Furnishing Division
Covered area in shops	84,443 square metres	51,700 square metres
Tonnage of steel for the project	7,000 tonnes	5,193 tonnes
Length of railway lines	19·31 kilometres	13·69 kilometres
Length of roads inside shops	6·17 kilometres	4·83 kilometres
Consumption of cement	19,812 tonnes	13,208 tonnes
Number of machines in the factory	585*	315
Total connected load	16,732 H.P.	4,465 H.P.
Consumption of electrical energy per annum	9·3 million units	1·8 million units
Staff—		
(*i*) Workshop staff	3,955	1,864
(*ii*) Other than workshop staff	2,341	923
Output (in double shift)	600 shells	600 coaches

*These are inclusive of 25 welding outfits.

There were 959 houses inside the colony and the roads for a total length of 12·4 kilometres.

The quality of the coaches built at the I.C.F. has been maintained at a high standard and their production costs have also steadily come down. This achievement also encouraged the I.C.F. to quote against Global tenders for export of coaches.

Contracts and other Agreements—The factory is wholly owned and managed by the Government of India.

(2) INTEGRAL COACH FACTORY—*contd.*

STATISTICS OF ANNUAL OUTTURN SHELLS

(Figures in Col. 4 to 12 are in thousands of Rs.)

Year	Type	Out-turn during the year No. of coaches	Total Cost price	Total sale value	Average cost per coach					Average sale value per coach	Balance under development Suspense Account at the end of each year
					Average cost of production	Dividend	Development Expenditure	Share of cost of Railway Board	Total		
1	2	3	4	5	6	7	8	9	10	11	12
1955-56 ..	KD (Third class) ..	12	24,00	21,00	200	104	74	..	378	175	41,90
1956-57 ..	T (KD)	71	1,27,77	1,24,25	180	26	21	..	227	175	
	Third (Indigenous) ..	17	27,78	29,75	163	66	43	..	272	175	68,61
1957-58 ..	T (KD)	81	1,35,41	1,01,25	167	10	49	..	226	125	
	Third (Indigenous) ..	141	1,34,32	1,76,25	95	24	15	..	134	125	(—)4,58
1958-59 ..	T (KD)	36	58,53	38,88	163	11	7	1	182	108	
	Third (Indigenous) ..	344	2,93,43	3,71,52	85	11	7	1	104	108	
	TLR	1	1,62	1,08	162	11	7	1	181	108	(—)77,06
1959-60 ..	Third	345	2,81,62	3,72,60	81	8	5	1	95	108	
	T.L.R.	100	85,88	1,08,00	86	8	..	1	95	108	
	C.N.T.	2	1,85	2,16	93	8	..	1	102	108	(—)1,55,16
1960-61 ..	T.L.R.	20	17,20	17,00	86	6	..	1	93	85	
	C.N.T.	148	1,27,42	1,25,80	86	6	..	1	93	85	
	T (C)	115	99,70	97,75	87	6	..	1	94	85	
	T.L.R. (C)	144	1,14,67	1,22,40	80	6	..	1	87	85	
	First Class	156	1,28,26	1,32,60	82	6	..	1	89	85	(—)2,69,43
1961-62 ..	T.L.R. (C)	41	32,42	32,80	79	6	..	1	86	80	
	First Class	335	2,36,02	2,68,00	70	4	..	1	75	80	
	T.L.R.	222	1,60,58	1,77,60	72	4	..	1	77	80	(—)3,61,14
1962-63 ..	T.L.R.	13	9,10	9,10	70	4	..	1	75	70	
	First class	126	86,55	88,20	69	3	..	1	73	70	
	F. T.	405	2,96,66	2,83,50	73	3	..	1	77	70	
	E.M.U. (1A, 2C and 1D)	55	72,42	59,40	483	12	..	2	497	432 (Per coach unit)	
	E.M.U. (B)	1	..	..	..	..	..	..	..	..	(—)5,89,11
1963-64 ..	T.L.R.	142	1,08,98	99,40	77	4	..	1	82	70	
	F.T.	39	30,29	27,30	78	4	..	1	83	70	
	E.M.U. (1A, 2C and 1D)	180	2,09,70	1,94,40	466	18	..	2	486	432 (Per coach unit)	
	E.M.U. (B)	3	*	*	*	*	*	*	*	*	
	M G.(T)	224	1,43,36	2,01,60	64	4	..	1	69	90	
	M.G. (F)	17	*	*	*	*	*	*	*	*	(—)56,13

Note—(*i*) The figures in column 4 represent the debits adjusted against the Railway Board at the rates shown in column 11 ; the difference between the actual cost of manufacture and the sale price being adjusted to the Development Suspense Account.

(*ii*) The figures in column 12 represent the expenditure incidental to the technical aid agreement, working of the Technical Training School, cost of jigs and fixtures manufactured for new type of shells and the difference between the selling price and the actual manufacturing cost.

(*iii*) The cost of 180 electric multiple unit trailers manufactured during 1963-64 is based on the cost of the first 400trailers for which the cost has been finalised.

*The costs of E.M.U. (B) and MG (F) have not yet been finalised.

(2) INTEGRAL COACH FACTORY—*concld.*

STATISTICS OF ANNUAL OUTTURN—FURNISHING OF SHELLS

(Figures in Cols. 4 to 12 are in thousands of Rs.)

Year	Description	Out-turn during the year No. of Coaches	Total cost price	Total sale value	Average cost per coach: Actual cost of production	Average cost per coach: Dividend	Average cost per coach: Development Expenditure	Average cost per coach: Share of cost of Railway Board	Average cost per coach: Total	Average sale value per coach	Balance under Development suspense account at the end of each year
1	2	3	4	5	6	7	8	9	10	11	12
1957-58 ..	Third class equipped ..	74	56,20	56,98	76	..	..	..	76	77	No adjustment
1958-59 ..	Third class equipped ..	161	1,05,41	1,20,41	65	..	..	..	65	77	(—) 17,28
	Third class non-equipped	10	4,39	5,00	44	..	..	..	44	50	
1959-60 ..	Third class equipped ..	93	56,74	69,75	61	..	..	..	61	75	
	Third class non-equipped	116	48,53	58,00	42	..	..	..	42	50	(—)46,14
	Prototype	1	68	75	68	..	..	..	68	75	
	T.L.R.	39	20,86	29,25	53	..	..	..	53	75	
1960-61 ..	Third class equipped ..	17	10,66	12,75	63	..	..	..	63	75	
	Third class non-equipped	3	1,34	2,25	45	1	..	..	46	50	
	T.L.R.	21	11,13	15,75	53	..	..	..	53	75	
	Third class sleeper (3-tier equipped).	75	46,25	46,50	62	1	..	..	63	62	
	Third class sleeper (3-tier non-equipped).	50	22,12	22,50	44	1	..	..	45	45	(—)76,98
	Third class sleeper (2-tier)	25	17,46	17,50	70	1	..	..	71	70	
	First class prototype ..	1	1,21	86	1,21	1	..	..	1,22	86	
	First class	2	1,90	1,72	95	1	..	..	96	86	
1961-62 ..	First class	229	1,90,72	1,96,94	83	1	..	..	84	86	
	T.L.R. (*i*)	1	57	75	57	1	..	..	58	75	
	T (C) Prototype ..	5	2,91	3,75	52	1	..	..	53	75	(—)15,15
	T.L.R. (C) Prototype ..	5	2,81	3,75	63	1	..	..	64	75	
1962-63 ..	First class	180	1,45,40	1,49,40	81	4	..	1	86	83	
	F.T.	171	1,07,30	1,11,15	63	4	..	..	67	65	(—)44,95
	E.M.U. A, C & D ..	21	15,81	17,11	2,97*	15	..	1	3,13	3,25*	
1963-64 ..	B.G. First class ..	3	3,02	2,49	1,00	5	..	..	1,05	83	
	B.G. First and Third class	18	11,17	11,70	62	5	..	..	67	65	
	B.G. E.M.U. Trailers ..	159	1,21,33	1,29,23	3,05*	20	..	..	3,25	3,25	
	M.G. E.M.U. Motor coach	4	3,52	3,00	88	5	..	..	93	75	
	B.G. T.L.R.	51	27,57	38,25	54	5	..	..	59	75	(—)38,67
	M.G. T.	109	54,11	45,78	50	5	..	..	55	42	
	M.G. F.	6	4,45	3,18	74	5	..	..	79	53	
	M.G. F.T.	1	86	53	86	5	..	..	91	53	
	M.G. F.L.C.	1	83	53	83	5	..	..	88	53	

*Per unit of One A, One D and Two Cs.

NOTE—In respect of E.M.Us. actual cost and average sale value is for a multiple unit. For total sale value and cost price the figures were worked out taking the sale value and cost price for the individual types contained in a unit viz. A, C and D.

STATISTICS OF WORKING

Capital-at-charge at the end of each year

(Figures in unit of Rupees)

Year 1	Fixed Assets: Township 2	Fixed Assets: Workshops 3	Fixed Assets: Total 4	Floating Assets 5	Total 6
1951-52	69,210	3,26,159	3,95,369	10,73,690	14,69,059
1952-53	19,09,003	32,71,192	51,80,195	10,93,966	62,74,161
1953-54	33,82,324	96,16,187	1,29,98,511	11,55,376	1,41,53,887
1954-55	48,81,207	2,62,53,420	3,11,34,627	37,10,457	3,48,45,084
1955-56	68,51,839	4,40,40,882	5,08,92,721	1,50,28,762	6,59,21,483
1956-57	80,34,132	5,02,42,008	5,82,76,140	2,83,07,700	8,65,83,840*
1957-58	92,09,691	5,89,57,334	6,81,67,025	3,81,14,955	10,62,81,980*
1958-59	1,08,32,816	6,38,24,462	7,46,57,278	3,19,37,079	10,65,94,357*
1959-60	1,33,49,131	6,36,31,815	7,69,80,946	2,52,73,901	10,22,54,847*
1960-61	1,25,77,000	7,10,74,000	8,36,51,000	(—) 27,98,000	8,08,53,000*
1961-62	1,28,21,000	7,96,11,000	9,24,32,000	(—) 56,69,884	8,67,62,116*
1962-63	1,55,05,000	8,63,37,000	10,18,42,000	(—) 2,53,50,635	7,64,91,365*
1963-64	1,99,14,000	8,81,24,000	10,80,38,000	4,67,54,000	15,47,92,000*

*Includes expenditure under the Furnishing and other projects.

(3) DIESEL LOCOMOTIVE WORKS

Headquarters—Varanasi

Administrative Set-up—The Diesel Locomotive Works is headed by the General Manager who is assisted by the Chief Mechanical Engineer and the Financial Adviser and Chief Accounts Officer.

History—On the basis of the recommendations contained in the Workshop Reviewing Committee's Report submitted in August 1955, the Railway Board decided to set up a Unit in Varanasi to manufacture steam locomotive components at a cost of Rs. 4·79 crores. The foundation stone for this Project was laid by the President of India in April 1956. Due to critical foreign exchange situation during the subsequent years the Project could not forge ahead as expected. Meanwhile, the problem of providing adequate transport to meet the country's growing requirements had come to the fore, as a result of the impact of the various plans and consequent phenomenal rise in the industrial and agricultural production. Steam traction having reached the saturation limits on about 22,531 kilometres of the trunk routes at the beginning of the Second Five Year Plan, it became necessary to make basic changes in the motive power to meet the ever increasing transport needs of the industry and the trade. It was, therefore, decided that both electrification and dieselisation were required to be introduced on the Indian Railways to meet the changes of all-round national development and, in that context, it was considered necessary that capacity should be generated indigenously for the manufacture of diesel locomotives, their import being a perpetual dent on the exiguous foreign exchange resources of the country. A Committee was, accordingly, set up by the Railway Board by the end of 1960 to investigate the possibilities of indigenous manufacture of diesel locomotives and diesel engines suitable for rail traction as also to suggest the location of the manufacturing Unit. On the basis of the Committee's Report, it was decided to set up a Diesel Locomotive Manufacturing Unit in Varanasi in the premises where the Locomotive Component Works had been set up earlier, with a view to accelerating the production of diesel locomotives by about two years which would save considerable foreign exchange. The Diesel Locomotive Works, thus, came into existence by the end of August 1961.

Collaboration Agreement—A collaboration agreement, for the manufacture of diesel locomotives—both vehicle and engine units—was entered into with Messrs. ALCO of America, on the 12th February 1962. A team of railway officers was also sent to the United States of America to assist ALCO in preparing the Project Report. It was finalised and submitted by Messrs ALCO in the first week of June 1962, based on the following premises:

(a) The covered accommodation provided should cater for an annual trargetted out-turn of 250 broad gauge 2400/2600 H. P. locomotives.

(b) The machinery and equipment should be adequate for the annual production of 150 locomotives for the present.

The complete list of plant and machinery for the production of 150 locomotives was received from the Collaborators in September 1962.

Contracts and other Agreements—The factory is wholly owned and managed by the Government of India.

Construction—The abstract estimate worked out to Rs. 19·57 crores, the foreign exchange component of Rs. 6 crores, having been underwritten by the Exim Bank of America. It was sanctioned by the Railway Board in February 1963. The total cost of the Project, distributed among the Departments is as under—

	Rs. in crores
Civil Engineering	9·59
Mechanical Engineering	8·65
Electrical Engineering	1·33

Workshop and Township—The workshop is spread over an area of 89 hectares. The township covers an area of 194 hectares, which includes a provision of 2,780 quarters and provides all the basic amenities such as a hospital, institute, rest house, community hall, shopping centre, primary and high schools, a bank, a post office, police station, stadium and an open air theatre.

The power supply requirements for the workshops and the township are being met by the Government of Uttar Pradesh from the Rihand Grid.

Important Features of the Project—Some of the important features of the Project are as under :—

Covered area in the shops	69,677 square metres
Tonnage of steel for the Project	15,000 tonnes
Length of railway lines:—	
Broad gauge	11·3 kilometres
Metre gauge	1·6 kilometres
Roads inside shops	6·4 kilometres
Roads in the colony	49·9 kilometres
Houses	2,780 Nos.
Water supply pipes	29·0 kilometres
Cement	59,000 tonnes
Number of machines in the factory	1,455
Number of workmen to be employed	1,745

(3) DIESEL LOCOMOTIVE WORKS—*contd.*

STATISTICS OF WORKING

(*a*) *Capital-at-charge*—Details of the Capital-at-charge during the respective years are given below—

(Figures in thousands of Rs.)

Year	Fixed Assets			Floating Assets (Stores and manufacturing suspense and Miscellaneous Advance (Capital)	Total
	Township	Workshops and offices	Total		
1961-62	54,22	98,20	1,52,42	48,63	2,01,05
1962-63	88,87	1,64,39	2,53,26	65,76	3,19,02
1963-64	2,20,48	4,53,44	6,73,92	2,82,46	9,56,38

The break-up of the Capital-at-charge under fixed assets as on the 31st March 1964 is as under—

(Figures in thousands of Rs.)

Project	Township	Workshops and offices	Total
1. Land	15,07	3,72	18,79
2. Roads and permanent way	10,90	15,96	26,86
3. Buildings	1,44,57	1,55,14	2,99,71
4. Water works	7,57	2,44	10,01
5. Machinery	..	2,24,27	2,24,27
6. Electric installations	8,23	13,97	22,20
7. General charges	27,92	35,94	63,86
8. Other expenditure	7,36	4,68	12,04
9. Survey expenses	1,00	1,79	2,79
Return on Capital	(—)2,14	(—)4,47	(—)6,61
Total	2,20,48	4,53,44	6,73,92

The break-up of the Capital-at-charge under floating assets as on the 31st March 1964 is shown below—

(Figures in thousands of Rs.)

Stores	21,50
Stores Suspense Account including stock adjustment account	13,98
Total stores suspense	35,48
Manufacture suspense	2,45,62
Miscellaneous Advances (Capital)	1,36
Total Floating Assets	2,82,46

(3) DIESEL LOCOMOTIVE WORKS—*concld.*

(*b*) *Development Suspense*—The balances held under the Development Suspense, at the end of each year, separately for the erstwhile Locomotive Components Works and the Diesel Locomotive Works are indicated below—

(Figures in thousands of Rs.)

Year	L.C.W.	D.L.W.	Total
1956-57	4	..	4
1957-58	78	..	78
1958-59	1,81	..	1,81
1959-60	3,46	..	3,46
1960-61	6,01	..	6,01
1961-62	31,53	53	32,06
1962-63	..	43,74	43,74
1963-64	..	66,69	66,69

PRODUCTION—The first knocked down locomotive assembled from imported components was commissioned on 3rd January 1964. By 31st March 1964, 3 more locomotives were turned out.

The factory is designed to produce annually, on double shift working, 150 locomotives.

APPENDIX A-II—HISTORY OF THE PROJECTS

(1) RAILWAY ELECTRIFICATION PROJECT

HEADQUARTERS—Calcutta

DC TRACTION SYSTEMS—Electric traction was introduced on the Indian Railways in 1925, and the first electric train ran from Victoria Terminus (Bombay) to Kurla and Bandra. From 1925 to 1936, electrification at 1500 V DC system was carried out on the ex-Great Indian Peninsula, the ex-Bombay Baroda and Central India and the ex-South Indian Railways.

Electrification of Howrah-Burdwan section along with Sheoraphuli-Tarakeswar Branch line on the Eastern Railway was taken up in 1954 at 3000 V DC system and completed in 1958.

The two DC systems *i.e.*, 1500 V DC and 3000 V DC extend over 530 route kilometres or 1,632 single track kilometres, distributed as follows:

Railway	Sections	Year of completion	Voltage	Route kilometres	Track kilometres
Central	Bombay to Poona and Kalyan to Igatpuri ..	1930	1500 DC	299	951
Western	Bombay Churchgate to Virar	1936	1500 DC	60	204
Southern	Madras Beach to Tambaram	1931	1500 DC	29	70
		Total on	1500 DC	388	1,225
Eastern	Howrah to Burdwan and Sheoraphuli to Tarakeswar.	1958	3000 DC	142	407

AC TRACTION—*General*—Early in the Second Plan period, steam traction reached saturation on those sections of the Eastern and the South Eastern Railways that served the new steel plants at Durgapur, Rourkela and Bhilai, as well as the plants already existing at Tatanagar and Burnpur that were being expanded. In 1957, it was decided to adopt 25 KV AC, 50 cycles, single phase traction, as the future standard system of electric traction on the Indian Railways.

Organisation—In September, 1957, an independent organisation named Main Line Electrification Project under the charge of an Engineer-in-Chief was set up for the execution of electrification of main lines serving the steel, coal and iron belts in the areas served by the Eastern and the South Eastern Railways on 25 KV AC 50 cycles single phase system. On the 1st May, 1958, the Calcutta Electrification Project, an organisation formed in June 1954 on the Eastern Railway for the electrification of Howrah-Burdwan Main Line and Tarakeswar Branch Line at 3,000 V DC system was amalgamated with Main Line Electrification Project and a new administration called the Railway Electrification was set up under the administrative control of a General Manager and Chief Engineer in June 1958.

This organisation includes Engineers of all branches, *viz.*, electrical, civil, signalling and telecommunication and is responsible for all direct works including procurement and commissioning of rolling stock and for co-ordination with other agencies. Of the latter, the power supply authorities are responsible for supply of power at 25 KV ACsingle phase while the Posts and Telegraphs Department is responsible for transferring the aerial communication circuits alongside the electrified lines to underground cables. The open line railways are responsible for remodelling of yards, slewing of tracks, *etc.*, on the sections to be electrified.

In 1957, the Indian Railways entered into an agreement with the French National Railways (SNCF) for affording technical guidance in the design, construction and maintenance of 25 KV AC electric traction installations and rolling stock, initially for the period upto the 31st August 1961. Agreement with a reduced scope was extended upto the 31st August 1963. From the 1st September 1963 a fresh agreement has been entered into with SNCF for the period upto 31st March 1966 for advice on operation and maintenance of 25 KV AC rolling stock.

SECOND PLAN SCHEMES—The schemes included for electrification in the Second Plan (April 1956—March 1961) were as follows—

Railway/Section	Route kilometres	Track kilometres
Eastern		
Durgapur to Mughalsarai (*via* Grand Chord) with Pradhankanta—Pathardih—Dhanbad—Kusunda—Tetulmari and Damodar—Kalipahari branches.	541	1,427
South Eastern		
Asansol—Sini, Khargpur—Rourkela, Rajkharswan—Dangoaposi and Kandra—Gomharria	537	1,128
Total ..	1,078	2,555

(1). RAILWAY ELECTRIFICATION PROJECT—*Contd.*

The following schemes were completed and energised as detailed below—

Sections	Railway	Date of energisation	Route kilo-metres	Track kilo-metres
Rajkharswan—Dangoaposi	South Eastern	11-8-1960	75	169
Sitarampur—Kumardhubi	Eastern	10-8-1960	11	
Asansol—Sitarampur including Borachuck—Hirapur	Do.	29-8-1960	11	238
Kumardhubi—Dhanbad including Pradhankanta—Pathardih	Do.	21-11-1960	55	
Dhanbad—Gomoh	Do.	1-2-1961	30	79
Waria—Asansol	Do.	31-3-1961	34	167
Asansol—Purulia	South Eastern	8-6-1961	74	170
Damodar—Kalipahari	Eastern	8-6-1961	14	15
Purulia—Chakradharpur, Sini—Tatanagar and Kandra—Gomharria	South Eastern	4-7-1961	158	374
Gomoh—Koderma	Eastern	21-8-1961	94	202
Koderma—Gujhandi	Do.	31-8-1961	10	24
Gujhandi—Gaya	Do.	13-11-1961	69	175
Dhanbad—Kusunda—Tetulmari	Do.	10-1-1962	10	18
Chakradharpur—Manoharpur	South Eastern	3-2-1962	61	135
Manoharpur—Rourkela	Do.	12-2-1962	41	115
Gaya—Son Nagar	Eastern	30-6-1962	76	
Son Nagar—Chandauli Majhwar	Do.	7-7-1962	108	509
Chandauli Majhwar—Mughalsarai	Do.	25-7-1962	19	
Tatanagar—Khargpur, single line	South Eastern	3/4-1-1963	128	165
		Total	1,078	2,555

The gross estimated cost of electrification of the above schemes, including rolling stock, switching stations, remote control and signalling modifications, worked out to Rs. 45·19 crores.

At the end of 31st March, 1964, about 65 per cent of the goods traffic on the electrified sections was hauled electrically; the passenger services on these sections continued to be steam-hauled.

THIRD PLAN SCHEMES—The sections included for electrification in the Third Five Year Plan (April 1961—March 1966) are given below—

(a) *New Electrification schemes*

Section	Route kilometres	Track kilometres	Gross estimated cost (in crores of Rs.)
Eastern Railway			
Sealdah—Ranaghat and Dum Dum—Bongaon	143	356	17·01
Ranaghat—Krishnanagar City, Kalinarayanpur—Santipur and Bandel—Naihati	50	100	Included in item (a) below.
Sealdah—Canning, Lakshmikantapur—Diamond Harbour, Budge Budge	154	262	11·53(a)
Durgapur—Burdwan	72	350	12·25
Saktigarh—Dum Dum—Chitpur yard	93	223	14·05
Portion of Mughalsarai yard (being electrified with Mughalsarai—Kanpur section)	5	24	Included in item (b) below.
Total	517	1,315	

(1) RAILWAY ELECTRIFICATION PROJECT—*concld.*

(a) New Electrification schemes—contd.

Section	Route kilometres	Track kilometres	Gross estimated cost (in crores of rupees)
South Eastern Railway			
Tatanagar—Khargpur (Doubling) ..	..	188	2·49
Howrah—Khargpur and Maurgram—Dankuni ..	128	495	18·55
Adra/Anara—Jamadoba Washery ..	62	128	1·14
Damodar—Radhanagar, Ramkanali—Chourashi and Garhdhrubeswar—Adra—Joychandipahar ..	26	38	0·43
Dangoaposi-Gua, Barajamda-Bolani and Padapahar—Banspani ..	76	122	3·17
Rourkela—Birmitrapur ..	25	36	0·60
Total ..	317	1,007	
Northern Railway			
Mughalsarai-Allahabad—Kanpur ..	344	857	20·09 (*b*)
Central Railway			
Igatpuri—Nandgaon—Bhusaval ..	311	750	18·13
Southern Railway			
Tambaram—Villupuram and the third line between Madras (Egmore)—Tambaram ..	134	212	5·52
Total ..	789	1,819	
GRAND TOTAL ..	1,623	4,141	124·96
(*b*) *Conversion of DC system to AC:*			
Eastern Railway			
Howrah—Burdwan main line and Sheoraphuli—Tarakeswar branch from 3000 V DC ..	142	407	7·46
Southern Railway			
Madras (Beach)—Tambaram from 1500 DC ..	29	70	1·70
Total ..	171	477	9·16
Total AC electrification including Conversion ..	1,794	4,618	134·12

Upto 31st March 1964, the following sections were energised—

Section	Railway	Date of energisation	Route kilometres	Track kilometers
1. Damodar—Radhanagar ..	South Eastern ..	5-6-1963	9	15
2. Ramkanali—Chourashi ..	Do.	12-6-1963	7	10
3. Garhdhrubeswar—Adra—Joychandipahar ..	Do.	1-7-1963	10	23
4. Sealdah—Titagarh ..	Eastern ..	21-10-1963	20	268 (items 4–6)
5. Titagarh—Kalyani ..	Do.	22-10-1963	28	
6. Kalyani—Ranaghat ..	Do.	23-10-1963	26	
7. Dum Dum—Barasat ..	Do.	8-1-1964	15	23
8. Ashoknagar Road—Bongaon ..	Do.	31-1-1964	35	44
9. Barasat—Ashoknagar Road ..	Do.	1-2-1964	19	21
10. Ranaghat—Santipur ..	Do.	23-3-1964	20	21
		Total ..	189	425

Only goods services were electrically hauled on the first three sections of the South Eastern Railway, on the remaining sections only the suburban services were electrified.

GALVANISING PLANT AT THE CHITTARANJAN LOCOMOTIVE WORKS—In the electrification schemes prior to 1958 the galvanised steel required for traction overhead equipment was imported. In May 1959, a galvanising plant was set up at the Chittaranjan Locomotive Works at a cost of Rs. 15 lakhs for galvanising the steel structures required for electrification. Upto 31st March 1964, about 24,000 tonnes of steel had been galvanised.

(1). RAILWAY ELECTRIFICATION PROJECT—*concld.*

INDIGENOUS MANUFACTURE—Indigenous manufacture of equipment used in railway electrification is one of the important responsibilities of the Railway Electrification Administration.

Catenary and contact wires are now manufactured in India from imported electrolytic copper. A number of special non-ferrous fittings for the overhead equipment have been developed at the Chittaranjan Locomotive Works and in the private sector.

Most of the signalling and telecommunication equipment are now manufactured in India by Indian Telephone Industries Bangalore. Lead-sheathed telephone cables and lead-sheathed signalling cables are now being manufactured in India.

AC electric multiple units, both trailers and motor coaches, hitherto imported, are now being manufactured at the Integral Coach Factory, Perambur, Madras.

Indian firms in the private sector are now engaged in the production of air-blast circuit breakers, silicon rectifiers, pantographs, vacuum exhausters, compressors traction motor blowers and brake equipment for the locomotives.

(2) DANDAKARANYA—BALANGIR-KIRIBURU RAILWAY PROJECTS

HEADQUARTERS—Waltair

ADMINISTRATIVE SET-UP—Upto the 12th October 1963, the D. B. K. Railway Project was under the charge of a General Manager. However, with effect from the 13th October 1963, the Project is headed by the Chief Administrative Officer and Chief Engineer.

After the conclusion of an agreement between the Government of India and Japan for the export of four million tonnes of iron ore per annum from the deposits in Bailadilla Hill Range in Madhya Pradesh and 2 million tonnes of iron ore per annum from the mines of Kiriburu (Bonai range) in Orissa *via* the port of Vishakhapatnam, the former commencing from the year 1966 and the latter from 1964, a separate construction Organisation headed by a General Manager was created, with head-quarters at Waltair in Andhra Pradesh, for the construction of the following three new broad gauge railway lines—

(1) Sambalpur-Titlagarh	182·00 kilometres
(2) Bimlagarh-Kiriburu	41·23 kilometres
(3) Kottavalasa-Bailadilla	448·00 kilometres

This organisation was named Dandakaranya-Balangir-Kiriburu Railway Projects and started functioning from 7th August, 1960. Subsequently, this organisation was entrusted with the following doublings, surveys and additional works—

(*i*) Nergundi-Khurda Road Doubling including the construction of a new bridge over the Mahanadi near Naraj	70·00 kilometres
(*ii*) Patch doublings on Raipur-Vizianagaram Section between Bissamcuttack-Theruvali and Lanjigarh Road-Ambodala stations of the South Eastern Railway	32·00 kilometres (broad gauge)
(*iii*) Preliminary engineering and final location surveys for doubling the Palasa-Vizianagaram and Jagannadhpur-Bhusandpur sections on the South Eastern Railway	515·00 kilometres (broad gauge) for preliminary survey and 321·87 kilometres (broad gauge) for final location survey.
(*iv*) New Marshalling Yard at Waltair	..
(*v*) Third line between Kottavalasa and Vishakhapatnam Port	25·75 kilometres (broad gauge)

This additional work was taken up along with the construction of new lines and the works listed at (*i*), (*iii*) and (*iv*) were handed over to the South Eastern Railway for completion on the 1st September, 1963. In addition, this Project undertook the construction of hutments, *etc.* at three centres in Bastar District of Madhya Pradesh for accommodating about 5,000 families of migrants from East Pakistan, at an approximate cost of Rs. 52 lakhs. About 600 families had been settled in these camps by the end of 1963-64.

(*i*) *Sambalpur—Titlagarh Construction*—This line provides a shorter route for the movement of iron ore from Kiriburu mines to Vishakhapatnam Port and an alternative route for the movement of traffic to the South. The line would also serve to open up a vast area in the heart of Orissa which has been enriched in the matter of irrigation and power facilities by the construction of the Hirakud Dam. The final location survey was completed in 1957-58 and the sanction for the construction was accorded by the Railway Board in April 1959. By the 15th April 1963, the entire section was opened to goods traffic. Non-interlocked signalling was completed and brought into commission in May, 1963 and the line was handed over to the South Eastern Railway on 1st January 1964. Telegraph and train controlling circuits were completed and brought into commission and the work on Standard III interlocking was in progress during the year 1963-64.

Some of the general features of this line are—

(*i*) Total length	182·00 kilometres
(*ii*) Estimated Cost	Rs. 14·58 crores
(*iii*) Total quantity of earth work in banks and cuttings	50 lakh cubic metres
(*iv*) Ruling gradient	1 in 125 (compensated)

(2). DANDAKARANYA—BALANGIR—KIRIBURU RAILWAY PROJECTS—*contd.*

(*v*) Bridges—

(*a*) Important	*7 Nos.
(*b*) Major	24 Nos.
(*c*) Minor	388 Nos.
(*vi*) Name of stations opened	(1) Hirakud (2) Attabira (3) Bargarh (Orissa) (4) Barpali (5) Dungripali (6) Khaliapali (7) Loisingha (8) Bolangir (9) Deogaon Road (10) Saintala (11) Sikar
(*vii*) Number of stations to be opened in future	10
(*viii*) Total area of land acquired	4,300 acres
(*ix*) Total length of permanent way including siding, etc.	218 kilometres.
(*x*) Total number of staff quarters	416

This work was originally estimated to cost Rs. 14·58 crores, but a reduction of about Rs. 1·90 crores was effected by realignment resulting in the reduction of the length of the line by about 1·83 kilometres, regrading of the formation, less number of staff quarters having been constructed than originally provided for, etc. This saving was, however, off-set to the extent of Rs. 31 lakhs to meet the cost of additional staff quarters decided to be charged to this Estimate.

(*ii*) *Bimlagarh—Kiriburu Construction*—After an exhaustive reconnaissance survey of various routes to connect the Kiriburu mines with the railhead and preliminary survey from Bimlagarh to Kiriburu and from Bisra to Kiriburu, it was decided to construct the line from Bimlagarh to Kiriburu as it was found to be most economical. The final location survey was carried out during October, 1959—June 1960. This line is meant for the movement of iron ore traffic from Bonai mines at Kiriburu to Bimalgarh in Orissa State. Work was started during 1960 and the line was opened for goods traffic on 25th May, 1963.

General features of this line are given below—

(*i*) Length of the line	41·29 kilometres
(*ii*) Estimated cost	Rs. 6·07 crores
(*iii*) Earthwork in banks and cuttings	34 lakh cubic metres
(*iv*) Length of tunnel (wholly lined)	117·4 Metres
(*v*) (*a*) Major Bridges	3 Nos.
(*b*) Minor Bridges	172 Nos.
(*vi*) Ruling gradient	1 in 50 (compensated)
(*vii*) Names of stations opened	(1) Rangra (2) Karampoda (3) Kiriburu
(*viii*) Number of stations to be opened in future	2
(*ix*) Total area of land acquired	770·36 acres
(*x*) Total length of permanent way including sidings, etc.	56·19 kilometres
(*xi*) Total number of staff quarters	235

Provision of non-interlocked signalling had almost been completed and arrangements were being made to hand over the line to the South Eastern Railway.

(*iii*) *Kottavalasa—Bailadilla Construction*—This 448·00 kilometres long broad gauge line will carry iron ore from the mine at Bailadilla in Madhya Pradesh to Vishakhapatnam Port in Andhra Pradesh for export to Japan. This line will traverse three States—Andhra Pradesh, Orissa and Madhya Pradesh—connecting important towns such as Jagdalpur, Koraput and Jeypore in Dandakaranya area which is being developed for the rehabilitation of displaced persons. The most difficult portion of the alignment lies in the Anantagiri Ghats, involving, in all, the construction of 49 tunnels (including three covered ways) having a total length of 12,175·3 metres.

*This excludes the Mahanadi Bridge (25×100′ Deck) the sub-structure of which was done by the Hirakud Dam Authorities and only girdering work was done by this Organisation.

. DANDAKARANYA—BALANGIR—KIRIBURU RAILWAY PROJECTS—*concld.*

The following figures illustrate the general features which emphasize the magnitude of this construction:

(*i*) Total length	448·00 kilometres
(*ii*) Estimated cost	Rs. 55·32 crores
(*iii*) Maximum elevation reached on the alignment (above M.S.L.)	997·61 kilometres
(*iv*) Maximum gradient	1 in 60 (compensated)
(*v*) *Earthwork*—	
(*a*) Other than rock cuttings	2·52 crore cubic metres.
(*b*) In rock cuttings	26·11 lakh cubic metres.
(*vi*) Number of tunnels (including three covered ways)	49
(*vii*) *Bridges*—	
(*a*) Waterway in major bridges	4,536·6 metres
(*b*) Waterway in minor bridges	3,116·2 metres
(*viii*) Number of stations to be opened initially	39
(*ix*) Number of stations to be opened in future	11
(*x*) Target date of completion	31-12-1965

(*iv*) *Third line from Kottavalasa to Vishakhapatnam Port*—As the existing double line from Kottavalasa to Waltair would not be able to cope with the additional traffic from the Kottavalasa-Bailadilla line when opened, it became essential to construct an additional line from Kottavalasa to Vishakhapatnam Port at an estimated cost of Rs. 1·20 crores. The construction of a portion of this line from Kottavalasa to Simhachalam North, a distance of 17·35 kilometres costing Rs. 96 lakhs, had been entrusted to this Project while the remaining portion from Simhachalam North to Vishakhapatnam Port was being constructed by the South Eastern Railway.

Survey for this work had been completed and contracts were under finalisation. The target date of completion of this work is the 31st December, 1965.

(*v*) *Patch doubling on the Raipur-Vizianagaram line on Bissamcuttack—Theruvali and Lanjigarh Road—Ambodala Sections of the South Eastern Railway.*—The work on these doublings has been nearly completed.

APPENDIX B

LENGTH OF RAILWAYS (BY DIFFERENT GAUGES) OPEN FOR PUBLIC TRAFFIC AT THE END OF EACH YEAR

Year	Broad gauge*	Metre gauge*	Special/Narrow gauges	Total
1853	32	..	..	32
1854	114	..	..	114
1855	272	..	..	272
1856	438	..	..	438
1857	462	..	..	462
1858	687	..	..	687
1859	1,006	..	..	1,006
1860	1,349	..	..	1,349
1861	2,554	..	..	2,554
1862	3,755	..	..	3,755
1863	3,991	..	43†	4,034
1864	4,717	..	43†	4,760
1865	5,340	29‡	43†	5,412
1866	5,662	29‡	43†	5,734
1867	6,251	29‡	43†	6,323
1868	6,378	29‡	43†	6,450
1869	6,775	29‡	43†	6,847
1870	7,609	29‡	43†	7,679§
1871	8,093	29‡	43†	8,165
1872	8,568	29‡	43†	8,640
1873	8,917	177‡	76†	9,168§
1874	9,304	558‡	76†	10,020§
1875	9,223	1,231‡	76†	10,527§
1876	9,247	1,720‡	76†	11,040§
1877	9,260	2,448‡	76†	11,780§
1878	10,551	2,606	76†	13,227§
1879	10,567	3,003	108†	13,670§
1880	10,940	3,629	185†	14,745§
1881	11,166	4,542	219†	15,916§
1882	11,359	4,764	222†	16,333§
1883	11,545	5,155	219†	16,831§
1884	11,909	6,584	240†	18,718§
1885	11,985	7,512	282†	19,768§
1886	12,440	7,945	370†	20,748§
1887	13,298	9,008	404†	22,697§
1888	13,998	9,065	404†	23,458§
1889	15,168	10,012	401†	25,568§
1890	15,646	10,272	463†	26,395§
1891	16,159	11,193	463†	27,855§

*'Broad' represents a gauge of 1·676 metres 'Metre' represents a gauge of 1·000 metre and 'Narrow' represents gauges of 0·762 metre and 0·610 metre.

†Represents or includes 43·45 kilometres of Nalhati line opened in 1863 on a special gauge of 1·22 metres incorporated with E. I. Railway from 1st April 1892 and reopened on 15th July of the same year on the broad gauge (1·676 metres) under the name of Azimganj branch.

‡Represents or includes Arkonam to Little Conjeevaram a length of 28·97 kilometres which was first completed on 1·06 metre gauge in 1865 and ater converted to Metre Gauge in July 1878.

§The slight difference in the totals with gauge-wise details is due to the inclusion of adjustments in totals on account of rounding off correction due to remeasurements, abandonments etc. of kilometrage of which the break-up by gauges is not available.

APPENDIX B—contd.

Year	Broad gauge	Metre gauge	Special/Narrow gauges	Total
1892	16,414	11,917	394	28,670§
1893	17,014	12,270	430	29,779§
1894	17,490	12,402	430	30,417§
1895	18,050	12,849	430	31,458
1896	18,693	13,343	430	32,596§
1897	19,573	13,739	507	33,981§
1898	20,577	14,148	668	35,470§
1899	21,663	15,092	1,015	37,857§
1900	22,370	16,270	1,122	39,834§
1901	22,623	16,908	1,304	40,818§
1902	22,721	17,672	1,339	41,732
1903	23,298	18,380	1,703	43,381
1904	23,710	18,607	2,044	44,361
1905	24,185	19,246	2,105	45,536
1906	25,022	19,552	2,253	46,827
1907	25,461	20,299	2,536	48,296
1908	25,671	20,701	2,836	49,208
1909	26,247	21,441	2,990	50,678
1910	26,878	21,774	3,006	51,658
1911	27,385	22,143	3,322	52,850
1912	27,663	22,796	3,428	53,887
As on 31 March 1913	27,716	22,940	3,415	54,071
1913-4	28,390	23,157	4,226	55,773
1914-5	28,690	23,419	4,677	56,786
1915-6	29,065	23,611	4,992	57,668
1916-7	29,261	23,828	5,308	58,397
1917-8	28,769	24,122	5,581	58,472
1918-9	28,959	24,266	5,704	58,929
1919-20	28,952	24,431	5,736	59,119
1920-1	29,282	24,539	5,771	59,592
1921-2	29,482	24,576	5,916	59,974
1922-3	29,594	24,958	5,988	60,540
1923-4	30,000	25,201	6,017	61,218
1924-5	30,227	25,371	5,992	61,590
1925-6	30,468	25,545	6,074	62,087
1926-7	31,168	25,640	6,035	62,843
1927-8	31,519	26,160	6,231	63,910
1928-9	32,300	27,171	6,433	65,904
1929-30	33,006	27,642	6,500	67,148
1930-1	33,478	28,067	6,500	68,045
1931-2	33,968	28,210	6,722	68,900
1932-3	34,007	28,410	6,722	69,139
1933-4	34,009	28,395	6,722	69,126
1934-5	34,118	28,419	6,698	69,235
1935-6	34,112	28,588	6,692	69,392
1936-7	34,113	28,603	6,692	69,408
1937-8@	34,113	25,358	6,634	66,105

@Burma Railways, a length of 3,315·25 kilometres of metre gauge, were excluded due to separation of Burma on 1st April 1937.

§See explanation on the previous page.

APPENDIX B—concld.

Year	Broad gauge	Metre gauge	Special/Narrow gauges	Total
1938-9	34,062	25,527	6,610	66,199
1939-40	34,044	25,587	6,603	66,234
1940-1	33,843	25,817	6,407	66,027
1941-2	33,230	25,700	6,212	65,142
1942-3	33,284	25,722	6,212	65,218
1943-4	33,272	25,767	6,159	65,198
1944-5	33,270	25,762	6,161	65,193
1945-6	33,292	25,756	6,159	65,207
1946-7	33,289	25,769	6,159	65,217
1947-8*	25,170	24,153	5,370	54,693
1948-9	25,257	23,767	5,470	54 494
1949-50	25,255	24,060	5,438	54,753
1950-1	25,257	24,185	5,403	54,845
1951-2	25,270	24,237	5,403	54,910
1952-3	25,357	24,433	5,370	55,160
1953-4	25,479	24,559	5,333	55,371
1954-5	25,843	24,655	5,354	55,852
1955-6	25,978	24,631	5,292	55,901
1956-7	26,021	24,763	5,131	55,915
1957-8	26,145	24,914	5,089	56,148
1958-9	26,380	24,958	5,119	56,457
1959-60	26,473	24,078	5,119	56,670
1960-1	26,676	25,168	5,118	56,962
1961-2	27,069	25,007	5,013	57,089
1962-3	27,359	25,063	4,982	57,404
1963-4	27,459	25,143	4,983	57,585

*Kilometrage of lines falling in Pakistan on 15th August 1947 excluded *i.e.*, approximately 8,204·44 B. G., 2,204·80 M. G. and 788·58 N. G. or a total of 11,197·82 kilometres in all.

APPENDIX C

PRINCIPAL STATISTICS OF WORKING FROM COMMENCEMENT OF ALL INDIAN RAILWAYS TREATED AS A SINGLE SYSTEM

TABLE—C-I.

Kilometrage, Capital Outlay, Earnings and Working Expenses of all Indian Railways

Year	Kilometrage open for traffic at the close of the year		Total capital outlay including suspense of lines open and partly under construction (in thousands of rupees)	Gross earnings (in thousands of rupees)	Working expenses (in thousands of rupees)	Net earings (in thousands of rupees)
	Total	Kilometrage excluding lines for which information regarding capital outlay, gross earnings etc. is not available				
1	2	3	4	5	6	7
1853	32	32	37,96	90	41	49
1854	114	114	4,00,00	2,31	1,42	89
1855	272	272	5,50,00	8,13	4,55	3,58
1856	438	438	8,00,00	16,10	6,74	9,36
1857	462	462	12,00,00	25,43	10,54	14 89
1858	687	687	16,00,00	33,82	15,63	18,19
1859	1,006	1,006	22,50,00	57,24	27,74	29,50
1860	1,349	1,349	26,66,00	66,67	37,08	29,59
1861	2,554	2,554	34,00,00	98,63	58,09	40,54
1862	3,755	3,755	48,00,00	1,34,45	80,32	54,13
1863	4,035	4,035	53,00,00	2,20,47	1,33,04	87,43
1864	4,760	4,760	58,00,00	2,85,89	1,70,85	1,15,04
1865	5,412	5,412	63,00,00	4,25,84	2,24,27	2,01,57
1866	5,734	5,734	70,00,00	4,91,91	2,59,38	2,32,53
1867	6,323	6,323	80,00,00	5,44,54	2,93,76	2,50,78
1868 .. .	6,450	6,450	84,00,00	5,67,09	3,07,46	2,59,63
1869	6,848	6,848	89,00,00	6,13,10	3,41,74	2,71,36
1870	7,678	7,678	90,00,50	6,66,67	3,63,15	3,03,52
1871	8,166	8,166	90,00,70	6,59,20	3,67,97	2,91,23
1872	8,641	8,641	90,00,90	6,82,96	3,73,45	3,09,51
1873	9,168	9,168	91,72,60	7,22,90	3,77,85	3,45,05
1874	10,020	10,020	95,87,15	8,33,77	4,03,89	4,29,88
1875	10,527	10,527	1,00,96,28	7,91,37	3,97,48	3 93,89
1876	11,040	11,040	1,04,77,85	9,33,83	4,46,45	4,87,38
1877	11,780	11,780	1,09,04,24	12,11,28	5,38,68	6,72,60
1878 ..	13,227	13,227	1,18,29,55	11,25,30	5, 62,38	5,62,92
1879	13,670	13,657	1,22,32,97	12,08,15	6,26,28	5,81,87
1880	14,745	14,515	1,28,56,91	12,86,55	6,48,00	6,38,55
1881	15,916	15,871	1,40,80,80	14,32,31	7,07,12	7,25,19
1882	16,333	16,229	1,43,24,42	15,35,23	7,66,81	7,68,42
1883	16,831	16,818	1,48,30,56	16,38,94	7,97,05	8,41,89
1884 ..	18,718	18,705	1,55,77,88	16,07,09	8,16,06	7,91.03
1885 . ..	19,768	19,742	1,61,19,06	18,03,27	8,89,01	9,14,26
1886	20,748	20,722	1,70,49,89	18,70,46	8,93,10	9,77,36
1887	22,197	22,618	1,82,87,93	18,46,81	9,10,33	9,36,48
1888	23,458	23,363	1,93,04,33	19,76,45	9,87,44	9,89,01
1889 .. .	25,568	25,458	2,05,04,61	20,49,37	10,37,74	10,11,63
890	26,395	26,367	2,13,67,04	20,67,01	10,30,89	10,36,12

APPENDIX C—contd.

TABLE—C-I.—*contd.*

Kilometrage, Capital Outlay, Earnings and Working Expenses of all Indian Railways

Year	Kilometrage open for traffic at the close of the year		Total capital outlay including suspense of lines open and partly under construction (in thousands of rupees)	Gross earnings (in thousands of rupees)	Working expenses (in thousands of rupees)	Net earnings (in thousands of rupees)
	Total	Kilometrage excluding lines for which information regarding capital outlay, gross earnings etc. is not available				
1	2	3	4	5	6	7
1891	27,855	27,805	2,21,06,42	24,04,03	11,30,39	12,73,64
1892	28,670	28,608	2,26,75,72	23,20,41	10,89,13	12,31,28
1893	29,779	29,717	2,32,66,86	24,05,62	11,33,09	12,72,53
1894	30,417	30,322	2,37,23,72	25,47,91	11,96,74	13,51,17
1895	31,458	31,332	2,43,76,41	26,20,07	12,10,11	14,09,96
1896	32,596	32,470	2,68,26,74	25,31,73	12,11,62	13,20,11
1897	33,981	33,902	2,82,48,94	25,56,28	12,45,71	13,10,57
1898	35,470	35,394	2,92,16,90	27,41,33	12,99,92	14,41,41
1899	37,857	37,781	3,08,57,81	29,36,87	13,93,80	15,43,07
1900	39,834	39,772	3,29,61,03	31,54,37	15,09,61	16,44,76
1901	40,818	40,766	3,39,16,89	33,60,38	15,72,45	17,87,93
1902	41,732	41,679	3,49,77,39	33,92,69	16,70,49	17,22,20
1903	43,381	43,212	3,41,11,44	36,00,82	17,11,09	18,89,73
1904	44,362	44,349	3,47,91,21	39,66,91	18,78,85	20,88,06
1905	45,536	45,524	3,58,51,80	41,69,92	19,95,33	21,74,59
1906	46,827	46,814	3,71,27,05	44,13,58	22,02,22	22,11,36
1907	48,296	48,211	3,91,86,93	47,30,50	24,32,32	22,98,18
1908	49,207	49,207	4,11,91,71	44,82,69	27,00,25	17,82,44
1909	50,678	50,678	4,29,83,20	47,06,38	26,38,48	20,67,90
1910	51,658	51,658	4,39,04,73	51,14,22	27,15,72	23,98,50
1911	52,849	52,849	4,50,06,30	55,27,92	28,83,92	26,44,00
1912	53,887	53,887	4,65,15,00	61,65,07	30,15,92	31,49,15
1st Qr. of 1913 ..	54,071	54,071	4.70,90,65	16,23,62	8,48,84	7,74,78
1913-4	55,773	55,773	4,95,08,64	63,58,56	32,92,94	30,65,62
1914-5	56,786	56,786	5,19,22,13	60,42,74	32,75,04	27,67,70
1915-6	57,668	57,668	5,29,98,29	64,66,04	32,91,95	31,74,09
1916-7	58,397	58,397	5,35,27,97	70,68,42	33,40,32	37,28,10
1917-8	58,472	58,472	5,41,79,90	77,36,39	35,36,87	41,99,52
1918-9	58,928	58,928	5,49,74,45	86,28,68	41,80,17	44,48,51
1919-20	59,119	59,119	5,66,37,77	89,15,32	50,65,65	38,49,67
1920-1	59,592	59,592	6,26,80,53	91,98,76	60,29,04	31,69,72
1921-2	59,974	59,974	6,47,97,17	92,88,67	70,79,95	22,08.72
1922-3	60,540	60,540	6,97,46,07	1,05,65,19	72,99,49	32,65,70
1923-4	61,218	61,218	7,17,93,02	1,07,79,66	68,44,77	39,34,89
1924-5	61,590	61,590	7,33,37,38	1,14,75,20	69,36,68	45,38,52
1925-6	62,087	62,087	7,54,31,52	1,13,39,21	71,09,05	42,30,16
1926-7	62,843	62,843	7,88,66,66	1,12,35,66	69,70,08	42,65,58
1927-8	63,910	63,910	8,22,86,25	1,18,26,19	72,60,06	45,66,13
1928-9	65,903	65,903	8,31,39,30	1,18,86,82	74,61,94	44,24,88
1929-30	67,148	67,148	8,56,74,62	1,16,08,14	75,48,61	40,59,53
1930-1	68,045	68,045	8,69,80,77	1,06,57,00	74,23,43	32,33,57

APPENDIX C—contd.

TABLE—C-I.—*concld.*

Kilometrage, Capital Outlay, Earnings and Working Expenses of all Indian Railways

Year	Kilometrage open for traffic at the close of the year		Total capital outlay including suspense of lines open and partly under construction (in thousands of rupees)	Gross earnings (in thousands of rupees)	Working expenses (in thousands of rupees)	Net earnings (in thousands of rupees)
	Total	Kilometrage excluding lines for which information regarding capital outlay, gross earnings etc. is not available				
1	2	3	4	5	6	7
1931-2	68,901	68,901	8,76,34,25	97,20,56	69,09,11	28,11,45
1932-3	69,139	69,139	8,84,90,68	96,20,56	68,89,62	27,30,94
1933-4	69,126	69,126	8,84,41,23	99,57,65	69,54,15	30,03,50
1934-5	69,236	69,236	8,85,47,18	1,02,81,07	70,60,18	32,20,89
1935-6	69,392	69,392	8,79,57,33	1,03,84,17	70,93,88	32,90,29
1936-7	69,408	69,408	8,80,12,80	1,08,06,73	69,92,81	38,13,92
1937-8†	66,105	66,105	8,45,68,20	1,07,57,00	69,62,55	37,94,45
1938-9	66,199	66,199	8,47,82,21	1,07,14,96	71,18,49	35,96,47
1939-40	66,234	66,234	8,52,59,34	1,11,50,28	72,20,18	39,30,10
1940-1	66,067	66,067	8,53,78,17	1,26,36,32	73,18,77	53,17,55
1941-2	65,141	65,141	8,48,05,51	1,44,69,37	80,32,52	64,36,85
1942-3	65,219	65,219	8,49,92,16	1,67,88,75	86,51,90	81,36,85
1943-4	65,198	65,198	8,58,53,83	1,99,32,37	1,14,11,00	85,21,37
1944-5	65,193	65,193	8,64,36,75	2,32,90,43	1,48,80,95	84,09,48
1945-6	65,207	65,207	8,72,67,97	2,43,59,15	1,69,35,05	74,24,10
1946-7	65,217	65,217	8,81,53,33	2,22,03,55	1,79,01,98	43,01,57
1947-8‡	54,694	54,694	7,42,20,30	1,83,69,41	1,63,94,59	19,74,82
1948-9	54,494	54,494	7,75,87,51	2,34,11,93	1,84,06,26	50,05,67
1949-50	54,753	54,753	8,13,07,44	2,58,32,00	2,07,22,52	51,09,48
1950-1	54,845	54,845	8,38,18,19	2,64,61,91	2,14,38,55	50,23,36
1951-2	54,909	54,909	8,61,57,26	2,94,13,80	2,27,58,15	66,55,65
1952-3	55,160	55,160	8,68,54,63	2,72,28,46*	2,19,98,84*	52,29,62
1953-4	55,371	55,371	8,78,46,48	2,72,80,94*	2,32,02,11*	40,78,83
1954-5	55,852	55,852	9,10,90,93	2,88,59,27*	2,35,98,70*	52,60,57
1955-6	55,901	55,901	9,75,48,86	3,17,51,29	2,60,17,10	57,34,19
1956-7	55,915	55,915	10,78,22,86	3,50,55,12	2,80,12,61	70,42,51
1957-8	56,148	56,148	12,28,66,99	3,82,94,75	3,11,16,85	71,77,90
1958-9	56,457	56,457	13,62,89,48	3,92,33,25	3,24,57,72	67,75,53
1959-60	56,670	56,670	14,38,75,06	4,24,06,33	3,37,48,45	86,57,88
1960-1	56,962	56,962	15,27,82,77	4,59,38,01	3,61,87,63	97,50,38
1961-62	57,089	57,089	16,90,06,90	5,02,29,35	3,92,35,38	1,09,93,97
1962-63	57,404	57,404	19,03,61,07	5,69,75,41	4,31,66,78	1,38,08,63
1963-64	57,585	57,585	21,66,49,21	6,33,84,30	4,74,73,59	1,59,10,71

*The figures of earnings and expenses do not include the freight charges on Railway stores, fuel etc. which were treated as free-hauled traffic during 1952-3 and 1953-4. Commencing from 1st April 1954, the freight charges on this traffic are taken in reduction of operating expenses instead of being credited to earnings.

†Excludes Burma Railways due to the separation of Burma from 1st April 1937.

‡Excludes figures for B.A. & N.W. Railways, but includes those for Assam & E.P. Railways as from 15th August 1947 due to partition of the country.

APPENDIX—C—contd.

PRINCIPAL STATISTICS OF WORKING FROM COMMENCEMENT OF ALL INDIAN RAILWAYS TREATED AS A SINGLE SYSTEM

TABLE—C-II.

Gross earnings per kilometre per week, percentage of working expenses to gross earnings, and percentage of net earnings on capital outlay of all Indian Railways from commencement

Year	Gross earnings per mean route kilometre per week	Percentage of working expenses to gross earnings	Percentage of net earnings on capital outlay given in column (4) Table C-I	Year	Gross earnings per mean route kilometre per week	Percentage of working expenses to gross earnings	Percentage of net earnings on capital outlay given in column (4) Table C-I
1	2	3	4	1	2	3	4
1853	54	45·56	1·29	1909	178	56·06	4·81
1854	39	61·47	0·22	1910	190	53·10	5·46
1855	58	55·97	0·65	1911	201	52·17	5·87
1856	71	41·87	1·17	1912	220	48·92	6·77
1857	106	41·45	1·24	1st Qr. of 1913 ..	231	52·28	1·67
1858	94	46·22	1·14	1913-4	219	51·79	6·19
1859	109	48·46	1·31	1914-5	204	54·19	5·33
1860	95	55·61	1·11	1915-6	216	50·91	5·99
1861	75	58·90	1·19	1916-7	233	47·26	6·96
1862	69	59·74	1·13	1917-8	254	45·72	7·75
1863	105	60·34	1·65	1918-9	281	48·45	8·09
1864	116	59·76	1·98	1919-20	290	56·81	6·80
1865	152	52·43	3·20	1920-1	297	65·54	5·06
1866	165	52·73	3·32	1921-2	296	76·22	3·41
1867	165	53·95	3·13	1922-3	334	69·09	4·68
1868	169	54·22	3·09	1923-4	339	63·50	5·48
1869	172	55·74	3·05	1924-5	356	60·45	6·19
1870	167	54·47	3·37	1925-6	351	62·69	5·61
1871	155	55·82	3·24	1926-7	341	62·04	5·41
1872	152	54·68	3·44	1927-8	352	61·39	5·55
1873	152	52·28	3·76	1928-9	346	62·77	5·32
1874	160	48·44	4·48	1929-30	331	65·02	4·74
1875	145	50·23	3·90	1930-1	300	69·66	3·72
1876	163	47·81	4·65	1931-2	269	71·08	3·21
1877	198	44·47	6·17	1932-3	265	71·61	3·09
1878	167	49·97	4·76	1933-4	273	69·84	3·40
1879	171	51·84	4·76	1934-5	281	68·67	3·64
1880	175	50·37	4·97	1935-6	282	68·31	3·74
1881	177	49·37	5·16	1936-7	294	64·71	4·33
1882	183	49·95	5·36	1937-8*	306	64·73	4·49
1883	187	48·62	5·68	1938-9	305	66·44	4·24
1884	171	50·76	5·09	1939-40	317	64·75	4·61
1885	176	49·30	5·64	1940-1	360	57·92	6·23
1886	177	47·75	5·73	1941-2	416	55·51	7·59
1887	162	49·31	5·12	1942-3	486	51·53	9·57
1888	163	49·96	5·12	1943-4	577	57·25	9·93
1889	160	50·64	4·93	1944-5	678	63·89	9·73
1890	151	49·87	4·85	1945-6	709	69·52	8·51
1891	168	47·02	5·76	1946-7	644	80·63	4·88
1892	157	46·94	5·42	1947-8†	640	89·25	2·66
1893	158	47·12	5·46	1948-9	814	78·62	6·45
1894	163	46·97	5·70	1949-50	903	80·22	6·28
1895	163	46·20	5·78	1950-1	907	81·02	5·99
1896	153	47·86	4·92	1951-2	1,008	77·37	7·73
1897	149	48·72	4·66	1952-3	1,002	80·79	6·02
1898	152	47·37	4·94	1953-4	1,004	85·05	4·62
1899	153	47·43	5·01	1954-5	1,051	81·77	5·78
1900	152	47·85	4·99	1955-6	1,139	81·94	5·88
1901	158	46·79	5·27	1956-7	1,264	79·91	6·53
1902	157	49·24	4·92	1957-8	1,386	81·26	5·84
1903	160	47·52	5·54	1958-9	1,412	82·73	4·97
1904	172	47·36	6·00	1959-60	1,523	79·58	6·02
1905	176	47·85	6·07	1960-1	1,647	78·78	6·38
1906	181	49·89	5·96	1961-62	1,796	78·11	6·51
1907	189	51·42	5·86	1962-63	2,023	75·76	7·25
1908	175	60·24	4·33	1963-64	2,242	74·90	7·34

*Excludes Burma Railways due to the separation of Burma from 1st April 1937.

†Excludes figures for B.A. & N.W. Railways, but includes those for Assam & E. P. Railways as from 15th August 1947 due to partition of the country.

APPENDIX C—contd.

PRINCIPAL STATISTICS OF WORKING FROM COMMENCEMENT OF ALL INDIAN RAILWAYS TREATED AS A SINGLE SYSTEM

TABLE—C-III.

Passenger Revenue Statistics of all Indian Railways from commencement

Year	Number of passengers (in thousands) *	Passenger kilometres (in thousands)	Passenger earnings (in thousands of rupees)	Average rate charged per passenger per kilometre (in Paise)	Year	Number of passengers (in thousands) *	Passenger kilometres (in thousands)	Passenger earnings (in thousands of rupees)	Average rate charged per passenger per kilometre (in Paise)
1	2	3	4	5	1	2	3	4	5
1853	..	..	..	..	1909	329,380	19,898,861	15,65,94	0·79
1854	..	..	..	..	1910	371,576	21,617,476	17,12,04	0·79
1855	..	..	..	..	1911	389,863	23,131,010	18,49,09	0·80
1856	..	..	..	..	1912	417,229	24,653,335	19,56,48	0·79
1857	..	..	..	..	1st Qr. of 1913	109,619	6,499,371	5,22,86	0·81
1858	..	..	..	..	1913-4	457,718	26,737,751	21,17,51	0·79
1859	..	..	..	..	1914-5	451,086	25,786,276	20,35,29	0·79
1860	..	..	..	..	1915-6	464,381	26,600,277	20,98,57	0·79
1861	..	..	..	..	1916-7	486,031	28,720,456	30,08,19	0·80
1862	..	..	..	..	1917-8	430,269	26,078,441	25,23,15	0·97
1863	..	..	..	..	1918-9	459,732	29,031,885	28,97,78	1·00
1864	..	..	..	..	1919-20	520,027	33,176,002	33,16,29	1·00
1865	..	..	..	..	1920-1	559,246	32,772,097	34,76,65	1·03
1866	..	..	..	..	1921-2	569,684	31,878,872	34,29,32	1·07
1867	..	..	..	..	1922-3	572,621	30,454,751	37,59,22	1·22
1868	..	..	..	..	1923-4	567,323	31,327,296	38,07,82	1·21
1869	..	..	..	..	1924-5	576,345	32,042,602	38,75,45	1·21
1870	..	..	..	..	1925-6	599,145	32,720,783	39,45,99	1·21
1871	19,283	..	2,02,49	..	1926-7	604,372	32,776,302	38,11,85	1·16
1872	20,847	..	2,17,66	..	1927-8	623,115	34,930,308	39,18,10	1·12
1873	22,835	..	2,39,41	..	1928-9	620,110	35,561,893	38,24,39	1·07
1874	24,977	..	2,38,93	..	1929-30	634,297	37,100,207	38,58,33	1·04
1875	27,479	..	2,68,32	..	1930-1	575,827	32,972,604	34,29,75	1·04
1876	31,353	..	3,18,61	..	1931-2	505,836	29,059,632	31,35,44	1·08
1877	35,104	..	3,29,33	..	1932-3	501,895	28,334,841	31,32,20	1·11
1878	39,458	..	3,37,87	..	1933-4	489,613	27,600,861	30,08,94	1·09
1879	44,050	..	3,65,36	..	1934-5	496,591	28,589,818	30,34,97	1·06
1880	49,155	..	4,57,29	..	1935-6	503,691	29,216,593	30,55,68	1·05
1881	54,764	..	3,79,23	0·90	1936-7	509,879	29,403,775	30,33,20	1·03
1882	58,875	46,64,265	4,08,37	0·88	1937-8†	521,285	30,331,702	31,08,42	1·03
1883	65,098	48,58,445	4,09,08	0·84	1938-9	530,623	30,163,601	30,73,40	1·02
1884	73,815	54,00,550	4,47,03	0·83	1939-40	529,675	29,808,353	30,47,25	1·02
1885	80,864	58,58,556	4,79,28	0·82	1940-1	575,723	32,072,003	34,14,11	1·06
1886	88,436	62,66,909	5,09,77	0·81	1941-2	623,163	32,219,241	39,68,59	1·12
1887	95,411	65,82,080	5,35,32	0·81	1942-3	622,255	39,191,962	48,80,16	1·25
1888	104,156	69,99,126	5,69,06	0·88	1943-4	789,866	52,313,444	67,17,08	1·28
1889	110,402	75,20,954	6,13,74	0·82	1944-5	926,698	60,557,537	76,53.26	1·27
1890	114,082	76,91,176	6,25,81	0·81	1945-6	1,044,344	66,523,467	86,74,16	1·30
1891	122,855	84,10,606	6,86,13	0·82	1946-7	1,138,952	67,689,453	89,53,65	1·32
1892	127,388	84,77,443	6,91,17	0·82	1947-8‡	1,043,948	54,152,961	73,26,61	1·35
1893	135,520	90,14,959	7,29.60	0·81	1948-9	1,184,505	62,470,207	93,11,47	1·49
1894	145,727	94,79,258	7,57,61	0·83	1949-50	1,255,258	64,405,498	95,25,23	1·48
1895	153,081	99,34,426	8,02,24	0·81	1950-1	1,307,791	67,064,168	99,21,72	1·48
1896	160,817	1,03,44,232	8,22,07	0·79	1951-2	1,232,073	63,650,788	1,11,41,79	1·75
1897	151,263	95,44,934	7,62,14	0·80	1952-3	1,212,089	60,183,464	1,01,82,95	1·69
1898	151,566	93,68,421	7,58,68	0·81	1953-4	1,220,398	60,428,564	1,01,35,24	1·68
1899	161,719	99,70,478	8,09,39	0·81	1954-5	1,259,152	62,200,038	1,03,73,97	1·67
1900	176,307	1,10,07,591	8,95,07	0·81	1955-6	1,297,355	62,898,453	1,08,75,48	1·73
1901	194,748	1,25,48.179	10,07,17	0·80	1956-7	1,382,543	67,905,416	1,17,39,05	1·73
1902	196,648	1,26,68,497	10,27,48	0·81	1957-8	1,430,246	69,730,468	1,20,04,70	1·72
1903	210,231	1,35,00,090	10,98,14	0·81	1958-9	1,440,921	68,398,332	1,17,57,30	1·71
1904	227,097	1,43,85,812	11,76,20	0·81	1959-60	1,528,602	74,190,171	@1,26,49,43	1·72
1905	248,157	1,59,33,280	12,73,83	0·80	1960-1	1,613,886	78,060,658	††1,32,51,76	1·71
1906	271,063	1,72,00,822	13,68,31	0·80	1961-2	1,712,058	82,283,979	1,51,80,21§	1·85
1907	305,865	19,055,677	15,04,49	0·79	1962-3	1,770,273	84,409,923	1,70,17,62	2·02
1908	321,169	19,477,776	15,36,87	0·79	1963-4	1,892,549	89,004,395	1,86,18,02§	2·09

*The comparison is affected by the fact that the number of passengers upto the year 1922-3 represents the figures of 'carried' traffic wherein passengers passing over more than one railway or gauge are counted as many times as the railways/gauges traversed. From 1923-4 onwards the figures refer to passengers originating i.e., counting them once only on the originating railway irrespective of the number of railways subsequently traversed. The comparative figure of 'carried' traffic for the year 1923-4 was 596,276,700 passengers.

†Excludes Burma Railways due to the separation of Burma from 1st April 1937.

‡Excludes figures for B.A. and N.W. Railways, but includes those for Assam and E.P. Railways as from 15th August 1947 due to partition of the country.

. . Figures not available.

@The total figures include an arrear debit adjustment of Rs. 85,03 (000) relating to previous year which is neither reflected in the break down of classwise earnings nor has been taken into account in calculating the average rate charged per kilometre.

††Includes debit adjustments of Rs. 1,08,23 (000) relating to previous year which is neither reflected in the break down of classwise earnings nor has been taken into account in striking the average rate.

§ The total figures include arrear debit adjustments of Rs. 31,61 (000) during 1961-62 and Rs. 1,452 (000) during 1963-64 relating to previous year which is neither reflected in the break-down of classwise earnings nor has been taken into account in calculating the average rate charged per kilometre.

APPENDIX C—concld.

PRINCIPAL STATISTICS OF WORKING FROM COMMENCEMENT OF ALL INDIAN RAILWAYS TREATED AS A SINGLE SYSTEM.

TABLE—C-IV.

Goods Revenue Statistics of all Indian Railways from commencement

Year	Quantity of goods (in thousands of tonnes) *	Net tonne kilometres (in thousands)	Earnings from goods (in thousands of rupees)	Average rate charged per tonne per kilometre (in Paise.)	Year	Quantity of goods (in thousands of tonnes) *	Net tonne kilometres (in thousands)	Earnings from goods (in thousands of rupees)	Average rate charged per tonne per kilometre (in Paise.)
1	2	3	4	5	1	2	3	4	5
1853	..	..	..	..	1909	61,879	15,273,200	28,12,47	1·20
1854	..	..	..	..	1910	66,656	19,773,961	30,43,17	1·54
1855	..	..	..	..	1911	72,412	21,843,183	32,93,22	1·51
1856	..	..	..	..	1912	79,734	25,555,394	37,91,84	1·48
1857	..	..	..	..	1st Qr. of 1913	21,807	6,607,092	9,94,61	1·51
1858	..	..	..	..	1913-14	83,939	25,546,630	37,77,49	1·48
1859	..	..	..	..	1914-5	82,271	24,897,013	35,09,18	1·41
1860	..	..	..	..	1915-6	83,823	28,055,970	38,75,79	1·38
1861	..	..	..	..	1916-7	87,626	32,418,699	41,43,00	1·28
1862	..	..	..	..	1917-8	86,844	34,363,283	44,49,54	1·30
1863	..	..	..	..	1918-9	92,624	36,203,960	49,13,89	1·36
1864	..	..	..	..	1919-20	89,036	33,360,155	47,11,60	1·41
1865	..	..	..	..	1920-1	88,947	32,574,019	47,96,84	1·47
1866	..	..	..	..	1921-2	91,589	28,963,587	49,52,31	1·71
1867	..	..	..	..	1922-3	95,351	30,044.098	58,02,32	1·93
1868	..	..	..	..	1923-4	73,983	30,786,754	60,28,13	1·96
1869	..	..	..	..	1924-5	79,044	34,777,904	66,44,68	2·20
1870	..	..	..	..	1925-6	81,140	32,539,893	64,42,17	1·98
1871	3,599	..	4,20,03	..	1926-7	87,210	33,317,644	65,08,28	1·95
1872	3,592	..	4,13,70	4·74	1927-8	91,232	35,813,834	69,40,65	1·94
1873	4,143	..	4,68,22	4·56	1928-9	92,293	35,792,504	71,15,55	1·99
1874	5,591	..	4,75,30	3·19	1929-30	88,778	35,196,419	68,82,76	1·96
1875	5,177	..	5,12,56	3·46	1930-1	84,715	33,368,039	64,41,10	1·93
1876	6,719	..	5,74,04	2·70	1931-2	75,772	30,000,061	58,72,51	1·96
1877	9,421	..	9,00,23	2·81	1932-3	71,734	28,129,062	56,88,85	2·02
1878	8,454	..	7,28,95	2·79	1933-4	77,741	30,588,807	61,58,54	2·01
1879	9,112	..	7,80,61	2·76	1934-5	85,859	33,278,363	64,34,53	1·93
1880	10,561	..	9,22,63	3·08	1935-6	88,327	33,608,747	64,58,93	1·92
1881	13,426	..	9,55,97	2·53	1936-7	87,647	35,050,596	69,88,37	1·99
1882	15,071	4,030,773	10,15,97	2·52	1937-8†	88,690	37.243,734	68,66,04	1·84
1883	17,272	4,857,603	11,28,89	2·33	1938-9	89,779	36,233,448	68,56,96	1·90
1884	16,930	4,515,549	10,56,68	2·34	1939-40	93,658	38,414,149	72,56,16	1·89
1885	19,229	5,428,064	11,94,20	2·19	1940-1	94,269	41,350,975	81,48,29	1·97
1886	19,890	5,540,943	12,38,59	2·24	1941-2	98,551	45,855,244	89,63,46	1·96
1887	20,520	5,225,287	11,92,93	2·28	1942-3	96,789	45,958,884	97,21,16	2·11
1888	22,752	5,848,995	12,79,04	2·19	1943-4	98,230	46,404,566	1,03,22,77	2·21
1889	22,511	5,951,135	13,05,56	2·19	1944-5	103,766	46,506,146	1,14,67,75	2·46
1890	22,976	5,738,904	12,99,52	2·26	1945-6	102,245	47,692,080	1,16,31,85	2·44
1891	26,579	7,258,502	15,60,81	2·15	1946-7	92,953	44,119,007	1,04,04,14	2·36
1892	26,758	6,922,388	14,77,19	2·13	1947-8‡	74,674	33,356,239	86,34,01	2·59
1893	29,310	7,235,819	15,19,01	2·10	1948-9	83,994	37,200,780	1,12,33,97	3·02
1894	33,168	7,949,806	16,22,01	2·04	1949-50	93,051	41,639,049	1,35,69,33	3·25
1895	34,168	8,085,579	16,33,75	2·03	1950-1	93,822	44,161,861	1,39,76,65	3·17
1896	32,992	7,503,326	15,37,73	2·05	1951-2	99,442	47,448,775	1,53,94,93	3·25
1897	34,240	7,871,437	15,85,47	2·03	1952-3	99,951	47,356,885	1,43,81,29@	3·57
1898	36,214	9,375,055	17,84,99	1·91	1953-4	100,955	48,347,894	1,45,38,80@	3·60
1899	40,386	10,083,952	19,19,91	1·90	1954-5	108,696	52,547,649	1,56,44,67@	3·54
1900	43,584	10,868,107	20,36,57	1·87	1955-6	117,123	59,637,638	1,77,92,19	3·54
1901	44,088	11,547,343	21,23,67	1·84	1956-7	127,389	65,774,169	2,01,09,03	3·60
1902	46,268	11,728,459	21,23,41	1·81	1957-8	135,505	73,414,896	2,25,71,52	3·63
1903	48,449	12,471,380	22,41,92	1·80	1958-9	138,750	76,540,997	2,37,03,96	3·66
1904	52.886	14,666,056	25,18,81	1·72	1959-60	147,864††	82,074,588	2,56,12,29**	3·74
1905	55,818	14,783,170	26,20,77	1·65	1960-1	157,643††	87,758,497	2,81,25,56(*d*)	3·88
1906	59,814	15,976,540	27,59,69	1·73	1961-2	161,855	91,292,355	3,00,81,17§	3·99
1907	63,096	17,726,679	29,24,27	1·65	1962-3	180,090	100,765,598	3,43,39,63	4·13
1908	63,399	16,230,410	26,32,04	1·62	1963-4	192,262	106,905,176	3,87,04,31	4·36

*The comparison is affected by the fact that the number of tonnes upto the year 1922-3 represents the figures of 'carried' traffic wherein consignments passing over more than one railway or gauge are counted as many times as the railways/gauges traversed. From 1923-4 onwards the figures refer to tonnes originating i.e. counting them once only on the originating railway irrespective of the number of railways subsequently traversed. The comparative figure of 'carried' traffic for the year 1923-4 was 98,078,000 tons.

†Excludes Burma Railways due to the separation of Burma from 1st April, 1937.

‡Excludes figures for B.A. & N.W. Railways, but includes those for Assam and E.P. Railways from 15th August 1947 due to Partition of the country.

@The figures of earnings do not include the freight charges on Railway stores, fuel etc. which were treated as free-hauled traffic during 1952-3 and 1953-4. Commencing from 1 April 1954, the freight charges on this traffic are taken in reduction of operating expenses instead of being credited to earnings.

.. Figures not available.

††Excludes the tonnage of Railway stores and materials carried in material/ballast trains on open lines by Railway Construction Project Authorities for construction of Independent Railway Project works in stock owned or hired by them.

**The total figures include an arrear debit adjustment of Rs. 2,06,94 (000) relating to earlier years, which has not been taken into account in calculating the average rate charged for carrying a tonne of goods during 1959-60.

(*d*) The total figures include an arrear credit adjustment of Rs. 654 (000) relating to earlier years which has not been taken into account in calculating the average rate charged for carrying a tonne of goods during 1960-61.

§ The total figure includes an arrear debit adjustment of Rs. 654 (000) relating to the earlier years which has not been taken into account for calculating the average rate charged for carrying a tonne of goods one kilometre during 1961-62.

APPENDIX D.

RESOLUTION ON THE SEPARATION OF RAILWAY FINANCE FROM GENERAL FINANCE

Resolution regarding the separation of Railway Finance from General Finance, Adopted by the Legislative Assembly on 20 September 1924 and Convention Resolutions of 1943, 1949, 1954, 1959 and 1960.

Convention Resolution of 1924

"This Assembly recommends to the Governor General in Council that in order to relieve the general budget from the violent fluctuations caused by the incorporation therein of the railway estimates and to enable railways to carry out a continuous railway policy based on the necessity of making a definite return to general revenues on the money expended by the State on Railways,

(1) The railway finances shall be separated from the general finances of the country and the general revenues shall receive a definite annual contribution from railways which shall be the first charge on the net receipts of railways.

(2) The contribution shall be based on the capital at charge and working results of commercial lines, and shall be a sum equal to one per cent on the capital at charge of commercial lines (excluding capital contributed by companies and Indian States) at the end of the penultimate financial year plus one-fifth of any surplus profits remaining after payment of this fixed return, subject to the condition that, if in any year railway revenues are insufficient to provide the percentage of one per cent on the capital at charge surplus profits in the next or subsequent years will not be deemed to have accrued for purposes of division until such deficiency has been made good.

The interest on the capital at charge of, and the loss in working, strategic lines shall be borne by general revenues and shall consequently be deducted from the contribution so calculated in order to arrive at the net amount payable from railway to general revenues each year.

(3) Any surplus remaining after this payment to general revenues shall be transferred to a railway reserve; provided that if the amount available for transfer to the railway reserve exceeds in any year three crores of rupees only two-thirds of the excess over three crores shall be transferred to the railway reserve and the remaining one-third accrue to general revenues.

(4) The railway reserve shall be used to secure the payment of the annual contribution to general revenues ; to provide, if necessary, for arrears of depreciation and for writing down and writing off capital; and to strengthen the financial position of railways in order that the services rendered to the public may be improved and rates may be reduced.

(5) The railway administration shall be entitled, subject to such conditions as may be prescribed by the Government of India, to borrow temporarily from the capital or from the reserves for the purpose of meeting expenditure for which there is no provision or insufficient provision in the revenue budget subject to the obligation to make repayment of such borrowings out of the revenue budgets of subsequent years.

(6) A Standing Finance Committee for Railways shall be constituted consisting of one nominated official member of the Legislative Assembly who should be chairman and eleven members elected by the Legislative Assembly from their body. The members of the Standing Finance Committee for Railways shall be *ex-officio* member of the Central Advisory Council, which shall consist, in addition, of not more than one further nominated official member, six non-official members selected from a panel of eight elected by the Council of State from their body and six non-official members selected from a panel of eight elected by the Legislative Assembly from their body.

The Railway Department shall place the estimate of railway expenditure before the Standing Finance Committee for Railways on some date prior to the date for the discussion of the demand for grants for railways and shall, as far as possible, instead of the expenditure programme revenue show the expenditure under a depreciation fund created as per the new rules for charge to capital and revenue.

(7) The railway budget shall be presented to the Legislative Assembly if possible in advance of the general budget and separate days shall be allotted for its discussion, and the Member in charge of Railways shall then make a general statement on railway accounts and working. The expenditure proposed in the railway budget, including expenditure from the depreciation fund and the railway reserve, shall be placed before the Legislative Assembly in the form of demands for grants. The form the budget shall take after separation, the detail it should give and the number of demands for grants into which the total vote shall be divided shall be considered by the Railway Board in consultation with the proposed Standing Finance Committee for Railways with a view to the introduction of improvements in time for the next budget, if possible.

(8) These arrangements shall be subjected to periodic revision but shall be provisionally tried for at least three years.

(9) In view of the fact that the Assembly adheres to the resolution passed in February 1923, in favour of State management of Indian Railways, these arrangements shall hold good only so long as the East Indian Railway and the Great Indian Pennisula Railway and existing State-managed railways remain under State management. But if in spite of the Assembly's resolution Government should enter on any negotiations for the transfer of any of the above railways to Company management such negotiations shall not be concluded until facilities have been given for a discussion of the whole matter in the Assembly. If any contract for the transfer of any of the above railway to company management is concluded against the advice of the Assembly, the Assembly will be at liberty to terminate the arrangements in this Resolution.

Apart from the above convention this Assembly further recommends—

(*i*) that the railway services should be rapidly Indianised, and further that Indians should be appointed as Members of the Railway Board as early as possible, and

(*ii*) that the purchases of stores for the State Railways should be undertaken through the organization of the Stores Purchase Department of the Government of India."

APPENDIX D—*contd.*

CONVENTION RESOLUTION OF 1943

The Legislative Assembly on 2 March 1943 passed the following resolution :—

"Whereas it has been found that the Convention, which was adopted under the Assembly Resolution, dated 20 September 1924, and which was intended to relieve the General Budget from violent fluctuations caused by the incorporation therein of the railway estimates and to enable railways to carry on a continuous railway policy based on the necessity of making a definite return to general revenues on the money expended by the State, has not achieved these objects, this Assembly recommends to the Governor General in Council that :

(*i*) for the year 1942-3, a sum of Rs. 2,35,32 thousand shall be paid to general revenues over and above the current and arrear contribution due under the Convention,

(*ii*) from 1 April 1943, so much of the Convention as provides for the contribution and allocation of surpluses to general revenues shall cease to be in force.

(*iii*) for the year 1943-4, the surplus on commercial lines shall be utilised to repay any outstanding loan from the depreciation fund and thereafter be divided 25 per cent to the railway reserve and 75 per cent to general revenues, the loss if any, on strategic lines being recovered from General Revenues, and

(*iv*) for subsequent years and until a new convention is adopted by the Assembly, the allocation of the surplus on commercial lines between the railway reserve and general revenues shall be decided each year on consideration of the needs of the railways and general revenues, the loss, if any, on strategic lines being recovered from general revenues."

CONVENTION RESOLUTION OF 1949

The Constituent Assembly of India (Legislative) on 21 December 1949 passed the following resolution—

"This Assembly, after considering the recommendations of the Committee appointed by it in April 1949 to review the Convention relating to the separation of railway from general finance which was adopted under the Assembly Resolution, dated 20 September 1924, and in supersession of that and all other previous resolutions on the subject, resolve—

(1) that railway finance shall continue to remain separated from general finance ;

(2) that the general tax-payer shall have the status of the sole shareholder in the railway undertaking ;

(3) that on the capital invested out of general revenues in the railway undertaking as computed annually, general revenues shall receive only a fixed annual dividend ;

(4) that for a period of five years, commencing from 1950-1, the annual dividend, shall be a sum calculated at the rate of 4 per cent on the capital invested provided that no dividend shall be payable on the capital invested out of general revenues in unremunerative strategic lines ;

(5) that a Committee of the House shall review the rate of dividend towards the end of the aforesaid period and suggest for the years following it any adjustment considered necessary, having regard to the revenue returns of the railway undertaking, the average borrowing rate of Government and any other relevant factors ;

(6) that the existing railway reserve shall be renamed the Revenue Reserve Fund and utilised primarily for maintaining the agreed payments to general revenues and for making up any deficit in the working of the railways ;

(7) that a Development Fund shall be constituted for financing expenditure for the following purposes :—

(*a*) passenger amenities,

(*b*) labour welfare, and

(*c*) railway projects which are necessary, but unremunerative ;

(8) that for meeting the cost of replacement and renewal of assets, the Depreciation Reserve Fund shall receive, for the next five years, a minimum contribution of Rs. 15 crores per annum chargeable to the working expenses of the undertaking;

(9) that the railway surplus shall be available for distribution amongst the Revenue Reserve Fund, the Development Fund, and the Depreciation Reserve Fund to the extent the last-named needs strengthening over and above the minimum annual contribution ;

(10) that a Standing Finance Committee for Railways and a Central Advisory Council for Railways shall be constituted in the manner laid down in the motion adopted by this House on 23 March 1949.

(11) that the annual estimates of railway expenditure shall be placed before the Standing Finance Committee for Railways on some date prior to the date for the discussion of the demands for grants for railways by the Assembly ; and

(12) that the Railway Budget shall be presented to the House, if possible, in advance of the general budget and separate days shall be allotted for its discussion and the Minister for Railways shall then make a general statement on railway accounts and working. The expenditure proposed in the railway budget, including the appropriation to the Depreciation Reserve Fund, the Development Fund, and the Revenue Reserve Fund shall be placed before the House in the form of demands for grants. The form the budget shall take, the details it shall give, and the number of grants into which the total vote shall be divided, shall be drawn up by the Ministry of Railways in consultation with the Standing Finance Committee for Railways.

2. This Resolution shall come in to force from 1 April 1950.

CONVENTION RESOLUTION OF 1954

The Resolution adopted by the Lok Sabha and Rajya Sabha on 16 and 21 December 1954, respectively, is as follows

"That this House approves the recommendations contained in the Report of the Committee appointed to review the rate of dividend at present payable by the Railway Undertaking to General Revenues as well as other ancillary matters in connection with the separation of Railway Finance from General Finance, which was presented to Parliament on 30 November 1954"

APPENDIX D—contd.

The Principal recommendations referred to in the Resolution are summarized as follows by the Railway Convention Committee in their report :

(1) It would be advantageous from all points of view to express the rate of dividend in terms of a percentage on the Capital-at-charge and the amount paid annually through a fixed rate of dividend inclusive of the element of interest.

(2) The present rate of dividend should remain unaltered for another period of 5 years. However, the Committee feel that in the matter of calculation of the Capital-at-charge and arriving at the total of the dividend payable, some minor adjustments are called for.

(3) The element of over-capitalization should be precisely assessed by the Railway Board and on that portion of the loan capital, the Railways shall pay the dividend at the rate equivalent to the average borrowing rate charged by the Government of India to Commercial Departments from year to year.

(4) The dividend on the Capital-at charge of new lines should be computed at a lesser rate viz., the average borrowing rate charged to Commercial Departments and a moratorium should be granted in respect of the dividend payable on the Capital invested on the new lines during the 'period of construction and upto the end of the fifth year of their opening for traffic, the deferred amount being repaid from the sixth year onwards in addition to the current dividend out of the net income of the new lines.

(5) The annual contribution to the Depreciation Reserve Fund which had been maintained at a level of Rs. 30 crores during the five year period ending the 31 March 1955 should be raised to Rs. 35 crores during the next quinquennium.

NOTE—The contribution to this Fund for five years commencing from 1955-6 was later increased from Rs. 35 crores to Rs. 45 crores with the approval of the Parliament.

(6) The Committee recognize that appropriation to the Development Fund and the solvency of the Fund are dependent on the availability and the size of the surplus, while the provision for depreciation should be based on the life of the assets, and their replacement on the actual conditions which cannot be deferred, if the earning potential is to be maintained. They, therefore, feel that the replacement of these assets should bear no relationship with the ultimate loss or gain of the Undertaking but should be met out of the Depreciation Reserve Fund.

(7) The Committee are in favour of extending the scope of the Development Fund so as to include amenities for all "users of Railway transport", such as improvement to goods sheds, loading and unloading platforms, waiting sheds for the trading public etc., which they consider as absolutely essential and recommended the continuance of the present practice of earmarking a minimum of Rs. 3 crores per annum on this account.

(8) The Railway Board should look into the matter of assessment of rent realized for Railway quarters and ensure that a return of rent more commensurate with the capital cost is obtained on all residential buildings built for Class III staff.

(9) The Committee are anxious that the primary amenity which the Railways must provide is that of safety of travel. They, therefore, desire that the expenditure on Safety Works should be given due priority in any allocation of funds from the Development Fund over the next few years.

(10) The Committee agree with the Railway Board that the distinction of splitting up of expenditure on works between Development Fund and Revenue for the purpose of allocation is unnecessary. The allocation should be determined as in the case of other works according to the total outlay expected on each work. The expenditure on unremunerative operating improvement works costing more than Rs. 3 lakh each should be charged entirely to Development Fund.

(11) The cost of construction of all new lines when decided to be constructed might be debited to Capital from the very beginning.

(12) In the event of the Development Fund not being in a position to meet the programme of expenditure chargeable to that Fund from its own resources, money should be advanced from General Revenues to the Railways for utilization on those Projects or Works which are of a developmental nature. Such advances should be treated as Temporary Loans to the Railways and will not be added to the Capital-at-charge on which 4 per cent dividend is payable annually. The Railways will pay interest on this loan to General Revenues at the average borrowing rate chargeable to Commercial Departments. It shall, however, be open to the Railways to repay this loan in instalments, if necessary, from accretions to the Development Fund in more prosperous years and thus liquidate the debt and the interest liability thereon.

(13) In view of the fact that the annual loss on working of strategic lines is insignificant, the Committee consider that the suggestion made by the Railway Board whether the operating loss on strategic lines should not be deducted from the contribution calculated for payment to General Revenues on non-strategic lines should not be pressed for a decision now, but brought up before the next Convention Committee, if the loss on this account is sizeable.

(14) The criterion for classifying a project as remunerative should be 5 per cent.

(15) While the Committee agree that amortization would eventually be of benefit to the Railways and the users of Railway transport alike, they agree with the Railway Board that the time is not yet ripe for amortization; they would, however, suggest that this question may be taken up at the time of next revision of the Convention.

(16) The Committee consider that in the present financial prospects, it will be idle either to prescribe any minimum limit for the balance in the Revenue Reserve Fund or to extend its scope so as to include amortization of Capital and this should wait till better days come.

(17) Parliamentary Committee should review the rate of dividend towards the end of the next quinquennium and suggest for the years following it, any adjustment considered necessary, in the light of the situation obtaining then.

(18) It would be enough if the Ministry of Railways submitted a review on the general working of the Railways during these five years to the next Convention Committee for their consideration.

APPENDIX D—concld.

CONVENTION RESOLUTION OF 1959

The following resolution was passed by the Lok Sabha at its sitting on Tuesday, the 28 April 1959:

RESOLUTION

"That this House resolves the period for the continuance in force of the recommendations of the Railway Convention Committee, 1954 governing the arrangements between Railway Finance and General Finance which were approved by this House by a resolution adopted on the 16 December, 1954 to be extended by one year upto the 31 March 1961".

The resolution was adopted in the Rajya Sabha in the following form on the 8 May 1959;

"That this House resolves that the period for the continuance in force of the recommendations of the Railway Convention Committee 1954 approved by this House by a resolution adopted on the 21 December, 1954, be extended by one year upto 31 March, 1961".

CONVENTION RESOLUTION OF 1960

The following resolution was passed by the Lok Sabha at its sitting on Tuesday, the 6th December, 1960.

RESOLUTION

"That this House approves the recommendations contained in the Report of the Committee appointed to review the rate of dividend which is at present payable by the Railway undertaking to General Revenues as well as other ancillary matters in connection with the Railway Finance *vis-a-vis* the General Finance which was presented to Parliament on 30 November, 1960".

The resolution was adopted in the Rajya Sabha in the following form on 12 December, 1960:

"That this House approves the recommendations contained in the Report of the Parliamentary Committee appointed to review the rate of dividend which is at present payable by the Railway Undertaking to General Revenues as well as other ancillary matters in connection with the Railway Finance *vis-a-vis* the General Finance which was presented to Parliament on the 30 November, 1960".

A summary of the principal recommendations of the Railway Convention Committee, 1960, as contained in its report dated 25 November, 1960 is given below:

(1) In the opinion of the Committee, the present mode of contribution, *viz.*, a fixed rate of dividend by the Railways to General Revenues does not call for any change in the next five years.

(2) The rate of dividend to be paid by the Railways to General Revenue should be fixed at 4·25 per cent during the five years 1961-66.

(3) The annual loss in the working of strategic lines should be borne by General Revenues.

(4) The Committee accept the suggestion of the Railway Board that the Capital-at-charge of the Northeast Frontier Railway, other than the clearly strategic portion thereof, should be regarded as unproductive and recommended that till such time as the line becomes productive or the next Convention Committee review the position, whichever is earlier, the rate of dividend payable on the Capital-at-charge should be at the average borrowing rate of Government.

(5) The total contribution to the Depreciation Reserve Fund should be Rs. 3·50 crores during the next quinquennium.

(6) The Committee are inclined to accept the suggestion that the existing rules of allocation of Railway expenditure between Capital, Revenue, Depreciation Reserve Fund and Development Fund might be retained without any modification during the next five years.

(7) The Committee are averse to the curtailment or limiting of expenditure on works met out of the Development Fund which in their opinion are as important as additions financed from Capital. They, therefore, see no alternative but to continue the facility of providing temporary loans from General Revenues to finance the Railway Development Fund during the next five years, unless the net surplus is able to meet in full the requirements of the Fund.

The Committee endorse the proposal of the Financial Commissioner (Railways) that the outstanding liability of the Development Fund to the General Finance as on 31-3-1961 should be liquidated in the *ad hoc* manner indicated in the last sub-para. of **Para** 11 of this Report so that the Railways could start on the Third Plan period with a clean slate in regard to this liability.

(8) The Committee recommend that the Railway Development Fund, besides meeting the cost of Labour Welfare Works, etc., should include a minimum allocation of Rs. 3 crores per annum for Usears' amenities as hitherto.

(9) The suggestion made by the Railway Board that the passenger tax at the existing rate might be merged with passenger fare from 1 April 1961 and that the State Governments might be paid a fixed amount based on the average collections in the period 1957—61 is reasonable. The Committee recommended that the fixed amount payable by the Railways may be Rs. 12·50 crores per year during the quinquennium 1961—66 representing the average of the actual collections for the years 1958-59 and 1959-60.

(10) While the Committee appreciate that the financial position of the railways during the next quinquennium will not be favourable for the creation of an Amortisation Fund, they nevertheless feel that this question should not be lost sight of inasmuch as in the context of the repatriation of all the dollar loans, it will assume importance.

(11) With reference to the recommendation of the Railway Convention Committee, 1954, contained in para. 19 of the Report, the Committee are of the view that the deferred dividend on new lines should be paid from the six year onwards only if the net income of the new lines leaves a surplus after payment of the current dividend.

MODIFICATIONS TO THE CONVENTION RESOLUTION, 1960

The following modifications were approved by the Parliament when voting the Railway Budget for 1963-64;

(*i*) The rate of dividend to be paid by the Railways to General Revenues should be 4·50 per cent in 1963-64 and in the later two years of the Third Plan.

(*ii*) The total contribution to the Depreciation Reserve Fund should be Rs. 380 crores during the next quinquennium by enhancing the appropriation by Rs. 10 crores in 1963-64 and by similar additions in each of the latter two years of the Third Plan.

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